

# South East Europe Regional Infrastructure Program



## **C-15: Pakrac, Croatia Water Utilities Financial Statements and Projections, and PSP Options Analysis**

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Booz | Allen | Hamilton

## Abbreviations and Acronyms

BAH	Booz Allen Hamilton
BOO	Build-Own-Operate
BOT	Build-Operate-Transfer
EBRD	European Bank For Reconstruction and Development
EU	European Union
FDI	Foreign Direct Investment
FY	Fiscal Year
HBOR	Hrvatska Banka za Obnovu I Razvitak
HRK	Croatian Kuna (Currency)
HV	Hrvatska Voda
GFS	Government Financial Standards
GOC	Government of Croatia
IAS	International Accounting Standards
IMF	International Monetary Fund
IP3	Institute for Public-Private Partnerships, Inc.
IPH	Institute for Public Health
IPO	Initial Public Offering
Km	Kilometers
ℓ	Liter
LGU	Local Government Unit
m	Meter
mg	Milligrams
MEPPP	Ministry of Environmental Protection and Physical Planning
MOF	Ministry of Finance
MTEF	Medium Term Economic Framework
MUE	Municipal Unitary Enterprise
NA	Not Applicable
NGOs	Non Government Organizations

O&M	Operations and Maintenance
OECD	Organization for Economic Co-operation and Development
PPP	Public-Private Partnership
PSP	Private Sector Participation
RIP	Regional Infrastructure Program
s	Second
SAA	Stabilization and Association Agreement
SOW	Scope of Work
TOR	Terms of Reference
UFW	Unaccounted-for-water
USD	United States Dollar
USAID	United States Agency For International Development
WB	World Bank
WTO	World Trade Organization
VAT	Value Added Tax
ZOV	Zagrebacke Otpadne Vode

### **Currency Conversion**

1 HRK =	0.16349 USD
1 € =	1.17 US\$

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## Executive Summary

Under the United States Agency for International Development's Regional Infrastructure Program (RIP), Booz Allen Hamilton (BAH) was asked to develop a business plan for the Croatian water utility "Komunalac d.o.o. Pakrac" (referred to as Komunalac throughout this report) in the town of Pakrac, Croatia, and evaluate the potential for private sector participation (PSP) in the provision of water services. The scope of work of this project, undertaken from October 26 through November 2<sup>nd</sup> 2003, entailed providing basic financial analysis of the existing utility to assess the financial viability of its water operation and the adequacy of its tariff structure, as well as analyzing options for PSP. A multidisciplinary team composed of foreign and local experts conducted the assessment of the water utility.

This report has three primary objectives: (i) to review the basic financial and institutional status of the water utility; (ii) to develop a medium-term financial forecast generating conclusions in terms of water sector financial solvency, ability to finance investment and requirements to adjust tariffs over the next five-years for the water utility; and (iii) to evaluate the options for PSP in the provision of water services and recommend the preferred option(s), if any.

Findings and recommendations presented in this report include:

- Komunalac is a small operation serving a population of approximately 10,000 persons with a total of 3,150 connections. Of the 3,150 connections, 2,950 are household customers and 200 are industry customers (restaurants, shops, businesses). One hundred percent of these connections are metered. Water consumption has increased by less than 1% per annum on average since the end of the war in 1995.
- Komunalac has a higher work force to customer ratio compared to the average European, Latin American, Russian or American water utility. This ratio indicates that RAD may be over staffed relative to the general size of its operational base.
- Most current maintenance and repair efforts are geared towards reducing water losses when water lines break, or pollution when sewerage lines break. Despite Komunalac's proactive water loss maintenance program, company officials estimated that technical system losses are between 50 and 55%.
- While the staff of Komunalac carries day-to-day activities related to the provision of water and the collection and disposal of wastewater, the utility itself does not undertake any capital investment planning, feasibility studies, design, or construction. Instead, Komunalac works

closely with the city's Office of Utility Services to determine capital investment priorities.

- The primary obstacles confronting the utility include: (i) insufficient water resources to sustain current and future levels of population and industrial use; (ii) high levels of unaccounted for water (between 50-55%); and (iii) insufficient financial resources to expand Komunalac's current network to surrounding villages.
- Aggressive water loss reductions combined with enhanced revenue from household and business customers should improve Komunalac's general financial performance.
  - If water losses were reduced to a more normal level of around 25%, annual total costs would be reduced by about 10% and financial losses would be reduced by about 24% (about HRK 224,957 or USD 35,707 in 2002). Water loss reductions would also result in further savings from lower electricity consumption.
  - Although annual cash collections are relatively high at plus 90%, the utility only collects 50% of its bills on time, a situation that results in late payments, penalties and fines. More efficient cash management and timelier bill collections can help the utility reduce its penalties and fines.
- Finally, the PSP options analysis revealed that under the current situation there are two options that should be explored in more detail by Komunalac:
  - Outsourcing Non-Core Functions. Komunalac has already had positive results outsourcing street cleaning and snow removal services. The utility should consider evaluating further this potential in such areas as billings and collections. In addition, should the Office of Utility Planning transfer responsibility for capital planning and works to Komunalac, these functions could also be outsourced.
  - Performance-Based Management Contract. There is potential for improved management and increased efficiency through a performance-based management contract. Komunalac should explore the potential for procuring the services of a domestic operator to manage the utility, with compensation in the form of a fixed fee plus performance incentives.

## **I. Introduction**

Under the United States Agency for International Development's Regional Infrastructure Program (RIP), Booz Allen Hamilton (BAH) was asked to develop a business plan and evaluate the options for Private Sector Participation (PSP) for Komunalac d.o.o. Pakrac ("Komunalac"), a water utility in Pakrac, Croatia. The RIP project aims to develop, through the implementation of basic water leakage detection work, future investment requirements and associated business plans for municipal water utilities whose distribution networks have been damaged during the war and whose customer base have shrunk due to population displacement.

The scope of this work (undertaken from October 26 through November 2<sup>nd</sup> 2003) entails providing basic financial analysis of Komunalac in order to assess the adequacy of its water tariff structure and the financial viability of its water operation in order to develop a five-year business plan. This is complemented by an analysis of the means and ways for the utility in Pakrac to lower its operating costs as well as finance its investment needs through PSP. This work was undertaken with a multidisciplinary team composed of foreign and local experts.

This report has three (3) primary objectives: (i) to review the basic financial and institutional status of the water utility; (ii) to develop a medium-term financial forecast generating conclusions in terms of water sector financial solvency, ability to finance investment and requirements to adjust tariffs over the next five-years for the water utility; and, (iii) to evaluate the options for PSP in the provision of water services and recommend the preferred options(s), if any.

This report is organized into nine chapters including this introductory chapter. Chapter II provides a brief overview of the underlying political, economic, and legal climate in Croatia, as well as the overall experience with PSP in the country. Chapter III is an overview of the water sector in Croatia, including descriptions of the roles and responsibilities of key institutions as well as the regulatory framework at the national and local levels. Chapter IV provides an analysis of the water sector in Pakrac, including the utility's recent economic performance and operating environment. Chapters V and VI provide an analysis of Komunalac's recent past and current financial performance as well as projections for its future performance under certain conditions. Chapters VII and VIII contain a description of the options for PSP and an outline of the recommendations for Pakrac. Finally, Chapter IX provides an action plan with recommended next steps based on the financial analysis and PSP options evaluation.



## II. Overview

### II.1 The Economy and Political Climate in Croatia

When it assumed office in early 2000, the administration of President Stipe Mesic took a number of steps to liberalize trade and prices, integrate Croatia's economy with the international markets, liberalize the infrastructure sector, and address corruption and cronyism in the public sector. In its bid to internationalize Croatia's economy, the country has become a member of the World Trade Organization (WTO), submitted its application for membership in the European Union (EU)<sup>1</sup>, and joined NATO's Partners for Peace Program. A key part of the reform process has been the introduction of PSP, and the government has been highly successful in privatizing the financial services and telecommunications sectors.

The result of these reforms has been an improving economic climate. In 2000, the economy emerged from years of war and post-war contraction and realized growth of 2.9%, a figure that increased to 3.8% in 2001. At the same time, inflation declined from 6.2% in 2000 to 4.9% in 2001.<sup>2</sup> Despite gains realized from economic growth and reduced inflation, the economy is still suffering from the country's high fiscal deficit, which stands at 7% of GDP.

After its initial success, the process of reform in the country slowed in 2002 when members of the ruling coalition began to disagree on key policy decisions. As a result, President Mesic stepped down in July 2002 and Prime Minister Ivica Racan assumed leadership. The Racan administration took office with a mandate to reduce the size of the public sector, while at the same time reducing unemployment and forging ahead in the reform process as a lead-in to parliamentary elections in late 2003.

Unemployment, currently estimated at 15.8%, is a major problem in Croatia today. As a result, the public sector is unduly large and employment protections are stringent. It is unlawful for employees to be dismissed due to their age or health, and in cases of lawful dismissal, the length of notice period and severance requirements are substantially higher than the EU

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<sup>1</sup> This follows Croatia's earlier signature of a Stabilization and Association Agreement (SAA) with the EU.

<sup>2</sup> "Strategy for Croatia," European Bank for Reconstruction and Development. 19 November 2002, p. 4.

average.<sup>3</sup> In terms of workforce, 64% of laborers in Croatia are unionized, and the unions are independent of both government and political parties.

The population in Croatia was measured at approximately 4.5 million in 2001, a decrease of 6.1% since the last census in 1991, and the population is an aging but educated one (47% have secondary education, and 12% higher education).

## II.2 Legal Environment in Croatia

Croatia's legal environment is typical of a country making the transition from a state-controlled to a market economy. While certain commercial laws – such as those governing bankruptcy – are advanced by regional standards, in other areas the legal framework is lacking. As a result, the pace of foreign direct investment in Croatia has been slow.

The Government of Croatia (GOC) has taken a number of steps to reform the legal environment, including:

- Passing a new law allowing international arbitration;
- Acceding to international anti-corruption instruments and mechanisms, including the Council of Europe Convention on laundering, search, seizure, and confiscation of the proceeds of crime, the Criminal Law Convention on corruption, and the UN Convention against Transnational Organized Crime;
- Establishing an Office for the Fight Against Corruption and Organized Crime;
- Introducing a new public procurement law in line with EU standards.

While the ongoing legal reforms have strengthened the structure of Croatia's legal system, the judicial system is still weak and confidence in the courts is lacking. To address this problem, the government has made reform of the courts system one of its top priorities and appointed a new Minister of Justice in 2001 and a new Chief State Prosecutor in 2002.

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<sup>3</sup> Employees who have worked for an employer for 20 years or more must be given up to 6 months notice and severance pay equating to 10 months salary (EU average is 4.9 months and 3.7 months respectively). "Strategy for Croatia," European Bank for Reconstruction and Development. 19 November 2002, p. 13.

## II.3 Experience with Private Sector Participation in Croatia

Croatia's experience with PSP is relatively recent, however privatization revenues have been an important source of financing for the government.<sup>4</sup> Under the guidance of the Croatian Privatization Fund, between 2000 and 2002 the Government of Croatia divested its holdings in the financial services and telecommunications sectors as well as in a number of small and medium enterprises it had taken over during the war.<sup>5</sup>

In the roads sector, a concession has been awarded for the construction of an Istrian highway to Bina-Istra, a consortium 51% owned by Bouygues of France and 49% by the GOC, and negotiations are ongoing for the award of a concession to upgrade the highway between Zabok and Macelj.

New energy laws provide for the introduction of PSP in the gas, oil, and electric power sectors. Under these laws, the GOC has made progress in the partial privatization (through a sale of 25% plus one share) of INA, the gas distribution monopoly. And soon HEP – the Croatian electric power company – will be divided into generation, transmission and distribution units under the control of an asset holding company, of which a 15% ownership share will be sold through an initial public offering (IPO). Similar legislation is being developed to support the unbundling and eventual introduction of PSP in the railways sector.

In the water sector, the recent BOT for the first-ever wastewater treatment in Zagreb is the most high profile example of PSP. It is also the first-ever BOT (in any sector) undertaken in Croatia. Currently, wastewater from Zagreb is discharged directly into the Sava River, causing serious pollution. An EBRD loan of €55 million (65.5 million USD) will help the city to tackle this problem and to comply with EU environmental standards. The EBRD's loan is being provided to Zagrebacke Otpadne Vode (ZOV), a private company chosen through an international tender to build, operate and maintain the treatment plant. In addition to building the plant, ZOV will also construct supporting infrastructure. The city will control the private company through a long-term concession contract, which sets out the discharge standards that the wastewater must meet.

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<sup>4</sup> In 2001, over 50% of the government's financing requirements were met through the proceeds from privatization.

<sup>5</sup> In many cases, a majority share in existing banks – such as PBZ and Slavenska Banka – was sold.

### **III. The Water Sector in Croatia**

The legal authority for the provision of water and wastewater services in Croatia has been decentralized to the municipal level. While this has resulted in more demand-responsive and locally appropriate approaches to service provision, it has hindered the development of regional solutions to such problems as wastewater treatment, water resources management, and environmental protection. In addition, many of the municipalities in Croatia lack the capacity to finance needed investments or undertake comprehensive long-range planning in the water and wastewater sector.

Although the decentralized framework transfers responsibility for service provision to the local level, municipalities still in many respects lack the autonomy to fulfill their obligations. For example, once a municipality determines its investment requirements and develops a plan for new capital works, it must apply to the Ministry of Environmental Protection and Physical Planning (MEPPP) for a location permit before it can break ground. In order to receive a location permit, it is required to carry out an environmental impact assessment that must be reviewed and approved by the Ministry. These national-level approvals and the process required to obtain them are the most time-consuming aspect of the capital planning process.

#### **III.1 Hrvatska Voda**

Hrvatska Voda (HV), or “Croatia Waters,” is the national government entity responsible for planning and policy setting in the area of water and wastewater treatment. According to its website, HV’s full range of responsibilities include:

- General water management;
- Studies, data, and project assignments and revisions;
- Investing and other financial issues;
- Coordination of plans for water use;
- Setup and maintenance of integrated data systems for water management;
- Control, survey, and informing on water conditions;
- Maintenance and regulation of watercourses;
- Ice and flood control;
- Construction and maintenance works in water management;
- Designing water control systems and other systems in water-related activities;
- Protection of water resources;

- Development and monitoring of water supply;
- Usage control and other protective measures; and
- Enforcement of legal sanctions in water conservation.

Recently, the GOC has undertaken some preliminary initiatives to rationalize the institutional structure of HV. The new role envisioned for HV is premised on the corporatization of water supply services at the municipal level, the regionalization of wastewater management, and the introduction of PSP in the financing and management of wastewater treatment facilities.

In its new role, HV effectively has regulatory authority over most water activities, including water abstraction, construction of domestic water supply and wastewater systems, pollution discharges, sand and gravel excavation, fish culture, and hydropower development.

HV also has a key role to play in assisting in the financing of new capital investment in water and wastewater infrastructure. Funding for such investment comes from:

- HV's role as on-lender of funds from Hrvatska Banka za Obnovu I Razvitak (HBOR or the "Croatian Bank for Reconstruction and Development");
- Water abstraction fees;
- Pollution charges; and
- The central budget.

While most of the funds collected from the national government through the central budget and from municipalities (through pollution charges and abstraction fees) go towards capital investments, a portion of those funds is retained by HV to cover its administrative costs.

In principle, HV provides funding to municipalities for capital investment in the form of loans. However in practice, funding tends to take the form of a debt-equity swap with the municipal utilities. There are some legal limits on this - by law, HV may assume no more than a 49% share in the ownership of any municipal utility company. In most cases, this debt-equity arrangement has not been formalized and HV has not been legally assigned ownership. As a result, the ownership structure of many utilities in Croatia is indeterminate.

### **III.2 Hrvatska Banka za Obnovu I Razvitak**

HBOR is the entity responsible for providing financing for investment in Croatia's water and wastewater sector. HBOR was established in 1992 under a Special Law in order to channel funds for emergency and other reconstruction investments needed during the war. After the war, HBOR's primary role shifted to providing funding for development activities of regional or national importance in Croatia. In this capacity, it provides medium- to long-term financing for projects, such as infrastructure investments, with long payback periods.

HBOR finances municipal investments in three ways:

- Through direct lending to municipalities;
- As a second tier bank through local commercial banks; and
- Through HV (this represents by far the largest element in HBOR's lending portfolio).

Whereas HV is the lead technical agency responsible for ensuring the feasibility of projects and undertaking detailed design work, HBOR is the sole provider of credit to Croatia's municipalities and as such is responsible for assessing their creditworthiness and capacity for borrowing to support investments in infrastructure.

### **III.3 Regulation of the Water Sector**

#### ***III.3.1 The National Level***

Unlike the newly formed regulatory agencies in the telecommunications and energy sectors, there is no independent regulatory agency governing the water and wastewater sector in Croatia. Rather, regulatory responsibility is split between various agencies and ministries at the national level, as well as regional and local government entities.

The Water Act of 1995 provides the legal foundation for the regulation of water resources in Croatia and gives responsibility for the country's water management regime to the State Water Directorate. Management of water resources is administered within catchments areas through collaboration between HV and local bodies.

The MEPPP, established in 2000, is responsible for setting and enforcing regulations relating to sustainable development throughout Croatia. This includes the protection of air, water, soil, sea, flora, and fauna. Surface waters (rivers, lakes, and artificial lakes), groundwater, and the

coastal zone waters are classified in one of four categories in accordance with their utilization and quality. New environmental standards detailing the maximum allowable concentrations are in preparation, however until their passage, no standards or guidelines exist at the national level.

Drinking water quality monitoring is the responsibility of Croatia's Institute for Public Health (IPH), and monitoring is undertaken on a weekly basis. Any utility that sells more than 100 l/second of water is required by Croatian law to maintain its own, in-house laboratory for water quality monitoring and testing, and must report the results of these tests to IPH. Utilities whose water sales are below this threshold may either send their samples to a commercial laboratory to be tested for a fee or send them to a regional bureau of IPH for testing at no cost. In addition to the regular, weekly samples provided by utilities, IPH also conducts random sampling of each water system. Although there are wastewater quality standards in existence in Croatia, these are not currently being enforced.

As the GOC takes steps to strengthen the legal and regulatory framework for the water sector within Croatia, it is also looking outwards at transboundary water issues. To this end, the GOC has ratified the following international agreements:

- The Convention on the Protection of Transboundary Waters and International Lakes (Helsinki, 1992)
- The Convention on Water Management Cooperation for the Protection of the River Danube (Sofia, 1994)
- The Convention for the Prevention of the Mediterranean Sea Against Pollution
- The Protocol for the Prevention of the Mediterranean Sea Against Pollution from Land-Based Sources (with Annexes I, II, and III)

In addition, the Government has entered into cooperation vis-à-vis water management issues with the Governments of Hungary, Bosnia and Herzegovina, and Slovenia.

### *III.3.2 The Local Level*

According to the Municipal Services Act (NN 36/95), which defines municipal services (including water supply and waste water treatment and disposal), municipal services may be performed by:

1. A company founded by one or more local government units;
2. A public institution founded by a local government unit;

3. A service plant, established by one or several local government units; and,
4. A legal entity or person, subject to concession agreement.<sup>6</sup>

At present, 130 Croatian service providers (mainly located in larger urban areas) provide water supply and limited wastewater treatment services. Local government units founded many of these companies, with more than 99 percent of these limited liability companies majority owned by local municipal governments.

Funding for the activities of municipal service companies is provided from various sources. However, in the case of water supply and wastewater disposal and treatment, the funds are generally provided from fees charged for the service. The service provider determines the price and the method of payment for the provision of the service. In general, there are no administrative or legal limitations on the tariff. The tariff is for all practical purposes controlled by the company's founder (i.e.; the local government).

The basic economic regulations and corresponding legislation influencing the local price of water in Croatia are listed in Table 1 below.

**Table 1. Tariff Category and Corresponding Croatian Legislation**

Tariff Category	Paid By	Legislation
Price of Municipal Service	Paid by end users	The source of revenue for municipal services is defined by the Municipal Services Act (includes the service, repayment of loans for construction of facilities and municipal infrastructure). The price is determined by the provider of the municipal service with the consent of the owners of the company.
Water User Fee	Paid by legal entities and persons that abstract or pump water from water courses, lakes, storage reservoirs, ground aquifers, and other natural resources.	The source of revenue for financing water management is defined by the Water Management Financing Act (NN 107/95). The fee is determined by the GOC.
Water Protection Fee	Paid by legal entities and persons that discharge wastewater or other substances that pollute water.	The source of the revenue for financing of water management is defined by the Water Management Financing Act (NN 107/95). The fee charged is determined by the GOC.

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<sup>6</sup> See "Water Pricing in Croatia, Current Policies and Trends," *The Regional Center for Central and Eastern Europe: Croatia-Country Description*. Edited by Marina Markovic. Page 12.



Tariff Category	Paid By	Legislation
Concessions on Water and Water Estate	Paid by concession holder for: water abstraction for public water supply; use of water power for electricity generation; water abstraction for technological purposes in industrial and similar activities; pumping of mineral and thermal waters – water abstraction for irrigation; and, fish farming in enclosed bodies of water.	Concession provides the right of use of water and water-related estate (i.e.; the right to perform economic and other activities on water and water related estate.

Source: “Water Pricing in Croatia, Current Policies and Trends,” The Regional Center for Central and Eastern Europe: Croatia-Country Description. Edited by Marina Markovic. Page 14.

## **IV. Water Services in Pakrac**

Pakrac is a small town situated in Northeastern Croatia, and Komunalac d.o.o. Pakrac (Komunalac) is the public utility responsible for the provision of water and sewerage services in the Pakrac area (which includes the towns of Pakrac and Lipic, as well as a number of small, nearby municipalities). The area served by Komunalac suffered major damage during the Yugoslav war, with much of the towns' infrastructure (including water and sewerage infrastructure) damaged or fully destroyed and many residents and commercial and industrial establishments fleeing the area. As a result, the town of Pakrac is now focused on repairing the damage caused during the war and extending basic infrastructure to keep pace with renewed growth in the area.

The primary obstacles confronting Komunalac include: (i) insufficient water resources to sustain current and future levels of population and industrial use; (ii) high levels of unaccounted for water (currently between 50 and 55%); and, (iii) insufficient financial resources to expand the current network to surrounding villages. The primary objective of this report is therefore to review the current financial status of Komunalac, and to determine the factors that may enable the utility to increase its financial sustainability and to possibly finance the capital investment projects necessary to reduce current water loss levels; expand the water network to surrounding villages, and to increase its water resources.

### **IV.1 Institutional Review**

Komunalac is a small operation serving a population of approximately 10,000 persons (with a total of 3,150 connections) in the towns of Pakrac and Lipik and the nearby municipalities of Dobrovac, Kukunjevac, Filipovac, Donji Čaglić, and Prekopakra. Pakrac and Lipik equally own Komunalac under a 50/50 partnership arrangement. The utility was initially incorporated in 1964, and then legally registered in 1996 as a commercial entity (d.o.o.). Its operating license was granted in 2000.

While the focus of this report is on Komunalac's responsibilities with respect to water and sewerage services, it is important to note that the utility is also responsible for solid waste, gas distribution, cemetery operation and maintenance, and city cleaning services.

Of the 3,150 total connections served by Komunalac, 2,950 are households and 200 are industry (restaurants, shops, businesses). One hundred percent of households and business are metered. Local consumption

of water has increased by less than 1% per annum on average since the end of the war in 1995.

#### ***IV.1.1 Komunalac d.o.o. Corporate Charter***

Komunalac's articles of incorporation reveal the following main responsibilities for the utility:

- To supply the general population, enterprises, and other organizations of Pakrac and the local community with drinking water;
- To maintain and repair the municipal property used by the utility in its water and wastewater activities; and
- Komunalac is also required to assist the local community with its natural gas distribution, street and park maintenance and solid waste collection

The corporate charter requires the utility to be financially self-sufficient and operate through revenue collected from its user charges. To achieve these goals, the utility is allowed to:

- Purchase property and non-property rights and alienate (sell or lease) property with the approval of its Directors (Founders).<sup>7</sup>
- The right to receive credits.
- The right to independently approve staff, and establish the form and size of employee wages as well as other income; and,
- The right to independently determine the allocation of its net profit.

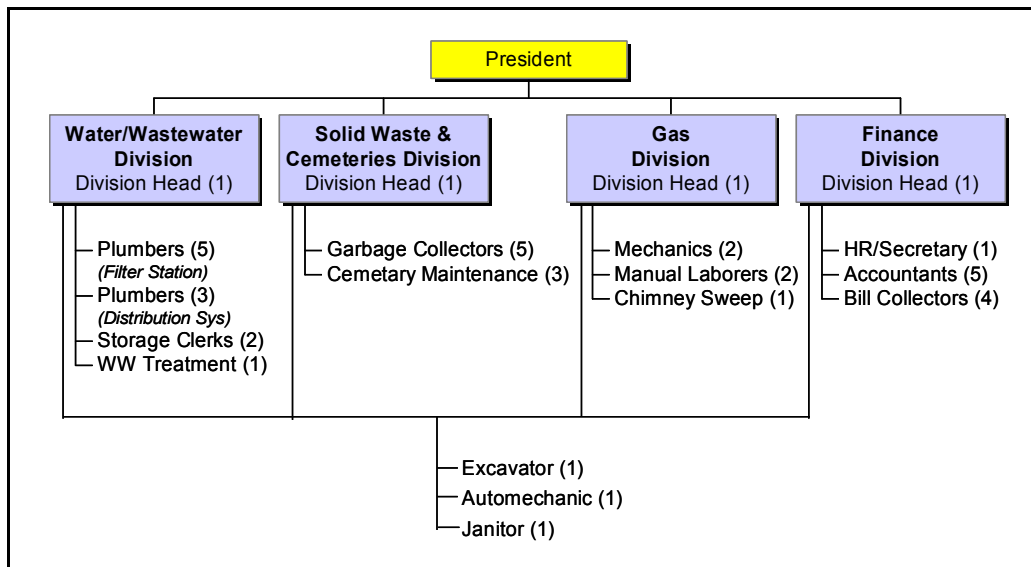
#### ***IV.1.2 Organizational Structure and Management***

Komunalac has a total of 42 full-time employees working across four departments. Approximately 10-12 employees (including bookkeeping, accounting, and sector manager) are directly involved in the water and sewer system operations. The organization chart in Figure 1 provides a detailed breakdown of the company structure.

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<sup>7</sup> Local government officials (Mayor, Deputy Mayor) serve on the Pakrac's Board of Directors.

**Figure 1: Komunalac d.o.o. Pakrac Organizational Structure**



Source: Komunalac d.o.o. Pakrac 2003.

The President of Komunalac's Managing Board serves as the company's Chief Executive Officer and reports to the Steering Board (of which he is also a member) on a quarterly basis. The five members of the Steering Board are appointed by the Pakrac City Council and come predominately from professional as opposed to political backgrounds.<sup>8</sup> In addition to a Steering Board, Komunalac must also respond to its Shareholders' Assembly. Unlike the Steering Board, the Shareholders' Assembly is essentially a political body consisting of ten members appointed by the City Council. Members of the Steering Board and the Shareholders' Assembly are paid for their services, and decisions made by both bodies are by consensus. The membership in both bodies is split 50/50 between the cities of Pakrac and Lipik.

Major decisions (such as the yearly budget) are decided by Komunalac's Shareholders' Assembly, and the Steering Board deals with the remainders. Day-to-day management (including such issues as hiring and firing of personnel, and concluding employment contracts) is the responsibility of the CEO.

Komunalac's primary reporting requirement is its annual "final report." This report summarizes previous years' investments and is the basis for deciding upon the next year's budget (which is based upon estimated project costs rather than budgetary projections).

<sup>8</sup> Each Steering Board member serves a term contiguous with that of the City Council.

### IV.1.3 Operational Efficiency and Staffing

Komunalac currently serves a population of about 10,000 with 42 permanent employees and 3 part-time employees hired on an as needed basis. Water utility operational efficiency refers to the lowest cost use of labor, energy, water and materials in the day-to-day operation of a utility. Ratios between inputs and outputs provide an indication of operational efficiency. Two such ratios are staff per '000 connections, and staff per '000 persons served. A high number for either measure may indicate inefficient use of staff.

Table 2 shows that the water/sewerage business unit of Komunalac currently serves about 238 general population customer(s) per employee. Komunalac has a higher work force to customer ratio compared to the average European, Latin American, Russian or American water utility. This ratio indicates that Komunalac may be overstaffed relative to the general size of its operational base.

**Table 2: Total Number of Employees Per Persons Served**

Entity	Number of Employees per Person Served
Komunalac <sup>9</sup>	1 per 238 persons
Average Russian Water Utility	1 per 380 persons
Average European Water Utility <sup>10</sup>	1 per 2,000 persons
Average Latin American Water Utility	1 per 1,500 persons

Source: World Bank, 2000. Booz Allen Hamilton 2003.

### IV.1.4 Administration

Komunalac's accounting department follows the Croatian Federal Government regulations on accounting and guidelines issued by the Ministry of Finance. In accordance with current Croatian legislation, the accounting department produces received revenue adjusted quarterly and annual balance statements (i.e., the expenses which they report for tax purposes are adjusted to reflect income received). Komunalac files tax returns for small business enterprises. The utility has not been audited for a number of years. Komunalac has a comprehensive financial accounting software system, but

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<sup>9</sup> This figure includes total Komunalac's employees. Komunalac is a small utility with a broad number of responsibilities (water, sewerage, solid landfill, cemeteries, parks, road maintenance). It is difficult to estimate the total number of employees dedicated exclusively to water/wastewater. As a result, Komunalac's efficiency figure may actually be better than currently calculated.

<sup>10</sup> The average European and Latin American water utility numbers includes medium and large water utilities such as Sao Paulo, Brazil and Frankfurt, German.

undertakes only modest cost accounting analysis and broad cost allocation (i.e., attributing to the appropriate cost centers their respective expenses).

#### *IV.1.5 Urban Planning*

Discussions with Komunalac officials and Pakrac and Lipik municipal authorities indicate that Komunalac itself does not undertake any long range planning and the local municipal government only undertakes minor capital investments (through the city's Office for Utility Services). The municipality apparently does not have a long-term urban plan, or a multi-year capital investment plan, but does maintain an annual financial plan.

While the municipal government currently undertakes long range planning and pays for major capital investments (the ownership of which is then subsequently transferred to Komunalac), it would like to transfer these responsibilities to Komunalac in order to benefit from the VAT advantages this arrangement would offer. Currently, because the municipality "owns" all of the major capital projects, it is the final VAT entity. However, while municipalities must pay VAT, they are not allowed under Croatian law to take any deductions. By contrast, a utility such as Komunalac is entitled to claim the netback, and therefore there is a financial incentive for the municipality to transfer capital investment planning and finance to the utility.

Discussions with representatives of the Urban Institute (Croatia) indicate that substantial work with small local municipal governments must be undertaken to strengthen their capacity to undertake necessary investment requirements. Under the current law, municipalities derive a substantial portion of their revenues from taxes shared with the central government (i.e.; 45% of income taxes, 10% of corporate taxes, and 60% of property taxes) and from local taxes (i.e.; parking fees, income tax surcharges etc.,). The central government provides transfers for certain purposes.

As a result, the borrowing capacity of most small local municipalities like Pakrac is limited. Annual municipal debt service, according to Croatian Law, cannot exceed 20 percent of budget revenues. However, very few Croatian municipalities have been in a position to borrow for long-term infrastructure investments. According to EBRD estimates, there is a significant discrepancy in the level of capital/investment spending undertaken by the 20 Croatian counties in 1999.<sup>11</sup>

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<sup>11</sup> See EBRD's "Strategy for Croatia", November 19, 2002 for more detailed discussion of the macroeconomic and current Croatian investment environment. Page 21.

## **IV.2 Technical Review**

### ***IV.2.1 Water Services***

To meet its raw water needs, Komunalac relies upon surface water from the River Sumetica. This is supplemented with groundwater from two wells in Pakrac and one in Lipik. Raw water extracted by Komunalac is pumped into two reservoirs with a total capacity of 1,800 m<sup>3</sup> (or twelve hours of storage). This water is of high quality and required only sand filtration and minor chlorine additives.

Current water production capacity is 40 ℓ/s from the Subotica river and slightly less than 10 ℓ/s from the wells. However, the water levels drop significantly over the May through September dry period, particularly in August total system capacity is dramatically reduced to just 10 ℓ/s. The factor limiting capacity from the stream during the wet season is filter capacity, and the factor limiting the capacity of the wells is pump capacity and the availability of raw water from the aquifer. In extreme periods, Komunalac must shut down part of its network.

Komunalac is currently researching additional water sources with help from HV. To date, no viable additional sources have been identified therefore HV has recommended the construction of a dam. The city considers the cost of the dam to be too high and therefore continues to explore the possibility of supplementing its water resources through the drilling of additional wells. This however will only solve the problem over the short to medium term.

As stated earlier, Komunalac's piped water distribution system totals 150 km and serves 2,950 residential customers and 200 commercial/government customers. The utility estimates that these 3,150 accounts constitute a coverage ratio of 60% within its service area, which totals 56 km<sup>2</sup> and includes Pakrac, Lipik, and 5 smaller surrounding municipalities. The utility expects that an additional six villages near Lipik and ten to twelve villages near Pakrac will be added in the near future.

According to Komunalac, all connections are metered and therefore all billings are based upon actual as opposed to estimated consumption. Bills to residential customers and most commercial/government customers are issued monthly in accordance with the Consumer Protection Act. A small number of large volume customers (such as the hospital and a glass factory) receive their bills every 15 days. While commercial/government customers comprise 8% of total customers by the number of accounts, they represent 35% of the volume of water consumed and 50% of the utility's revenues.

The utility is currently undertaking preventive and regular maintenance where possible and financially feasible. There has been limited additional capital investment due to insufficiency of funds provided by the

current tariff structure. Most current maintenance and repair effort are geared towards reducing water losses. Despite Komunalac's proactive water loss maintenance program, company officials estimated that the current level of unaccounted for water (UFW) is between 50 and 55%

Komunalac officials indicated that in 2001 and 2002 the utility produced about 1,000,000 m<sup>3</sup> (see Table 5 below). Households used about 300,000 m<sup>3</sup> of water. Businesses used an average of 150,000 m<sup>3</sup> of water per annum. Over the past three years, total system losses have oscillated between an estimated 519,000 m<sup>3</sup> in 2000 to 557,000 m<sup>3</sup> of water in 2002<sup>12</sup>.

Komunalac has several flow meters but they are not sufficient to provide a system-wide evaluation. Komunalac's Managing Director provided the water production and loss figures shown in Tables 3 and 4 below. However, in various conversations, utility officials indicated that the water loss rates maybe somewhat lower. In the absence of effective metering, the utility has provided estimated water production, billed and loss levels.

**Table 3: Komunalac Production, Delivery, and Estimated Water Losses**

	Cubic meters (m <sup>3</sup> )	2002 Cubic meters (m <sup>3</sup> )
Pakrac Water Production <sup>13</sup>		1,000,000
Water Delivery Households	298,000	
Water Delivery Businesses	150,000	
Subtotal Water Delivered		448,000
Water Loss		552,000
% Water Loss		55%

Source: Komunalac d.o.o. Pakrac October 2003; BAH 2003 estimates.

Any reduction in technical water losses will therefore positively impact the utility's financial position by significantly reducing the cost of the service provider's electricity usage.

#### **IV.2.2 Wastewater Services**

Komunalac boasts an unusually high level of coverage for piped sewage collection and a very high rate of sewage treatment compared to most Croatia cities. According to the utility, approximately 97% of customers within its service area are connected to the piped sewerage network, with the remaining customers disposing of sewage into septic tanks. One hundred percent of the sewage collected by Komunalac is mechanically treated, and is then disposed of in a nearby stream (not the same river used for raw water

<sup>12</sup> Please see Table 10 below.

<sup>13</sup> Estimate provided by the Direktor of Komunalac d.o.o. Pakrac.



abstraction, but part of the same watershed). Large commercial customers are not required to undertake any pretreatment before disposing of sewage into the piped collection network.

#### *IV.2.3 Capital Investment*

Although Komunalac itself does not undertake any capital investment planning, feasibility studies, design, or construction, it works closely with the city's Office of Utility Services to determine capital investment priorities.

Currently, when the city's Office of Utility Services begins the capital planning process, it goes to HV to request funding for a feasibility study, which is then contracted out. After the feasibility study is completed, Komunalac must apply for a building permit from the MEPP. This is one of the most time-consuming stages in the capital investment process, requiring national-level authorization for local works. Once the building permit is received, Komunalac must then identify an appropriate source of funds. There are three primary sources of funding for capital works in Pakrac:

- HV provides funding upon request for the construction of capital assets;
- The city of Pakrac may self-fund projects through its budget; and
- Komunalac may apply for funding from a variety of bi- and multi-lateral donors.

All loans for capital works come from HBOR, and loan guarantees are provided by HV. Once funding is secured, the city of Pakrac contracts out the design and construction of new capital works.

Currently, Komunalac's top investment priorities are the following:

- **New Wells.** The city is trying to identify additional locations where wells can be drilled as a short-term solution to the water shortage. The cost of this project is estimated at HRK 1.5 million, and funding will come from a combination of HV and the municipality itself.
- **Dam Construction.** Because the drilling of additional wells will provide sufficient additional water only in the short term and because no additional surface water sources have been identified, the construction of a dam is being explored as the most viable long-term solution in Pakrac. The dam would be intended primarily to resolve the water shortage, but would also provide water for irrigation purposes and would be a flood protection mechanism. The cost of the dam is estimated at between HRK 50 and 60 million and a source of funding has not yet been identified.
- **Second Phase of Wastewater Treatment.** Currently, 100% of the sewage collected by Komunalac is mechanically treated. Further treatment is

considered desirable by the city, and therefore initial plans have been developed for future investments in biological /chemical treatment. The cost of this project is estimated at HRK 4 million, and funds have not yet been identified due to the relatively low priority compared with the need to identify additional water sources.

- **Leakage Reduction.** With support from USAID, a leakage reduction study has been undertaken and capital works totaling HRK 360,000 identified as needed to reduce major leakage. According to the leakage reduction study, these investments would pay for themselves within three to four years.

Komunalac would also like to expand its water network to other villages in the area, but has neither the water resources nor the investment capital required for doing it. Currently, six villages with a total population of between 4,000 to 5,000 persons obtain water from wells. These six unconnected villages are located near the municipality of Lipik. In addition, there are 10-12 small villages within the surrounding area of the municipality of Pakrac that are also not connected to the water network.

#### *IV.2.4 Water Demand Trends*

Table 4 below provides an estimate of potential future water delivery for the service provider over the medium term. The forecast is derived from discussions with water utility management; a consulting report produced in 2003 and best estimates by Booz Allen Hamilton. In brief, water delivered to households is not expected to increase significantly over the medium term. Based on the current level of repairs and rehabilitations, the water loss level (percentage) is expected to modestly decline.

**Table 4: Komunalac Estimate of Water Production, Delivery and Losses**

	2000 Cubic meters (m <sup>3</sup> )	2001 Cubic meters (m <sup>3</sup> )	2002 Cubic meters (m <sup>3</sup> )	2003f Cubic meters (m <sup>3</sup> )	2003f Cubic meters (m <sup>3</sup> )
Komunalac Water Production (M <sup>3</sup> ) <sup>14</sup>	950,000	1,000,000	1,000,000	950,000	950,000
Water Delivery Households (m <sup>3</sup> )	266,135	282,560	298,000	300,000	300,000
Water Delivery Businesses (m <sup>3</sup> )	165,222	162,483	150,000	170,000	170,000
Subtotal Water Delivered	431,357	445,043	448,000	470,000	470,000
Water Loss (m <sup>3</sup> )	518,864	554,957	552,000	480,000	480,000
% Water Loss	54%	56%	55%	50%	50%

Source: Komunalac d.o.o. Pakrac October 2003; Booz Allen Hamilton 2003 estimates.

F=forecast; Est=Estimate

<sup>14</sup> Estimate provided by the Direktor of Komunalac d.o.o. Pakrac.

## V. Komunalac's Financial Performance

The analysis of Komunalac's financial results over the past few years is based on a rapid review of the firm's "unaudited" financial accounts as well as meetings with water utility officials. A cursory review of these accounts indicates that they do not fully adhere to international audit standards in a number of areas (e.g. treatment of receivables, and computation of cash flow) and fail to provide a sufficient level of financial information regarding the cost and revenues associated with the firm's other small businesses (i.e., solid waste management, cemetery clean-up).

### V.1 Profitability Analysis

Komunalac has a comprehensive financial (cost) accounting software program. However, it was still difficult to verify whether costs were appropriately allocated to individual cost centers. Consequently, the financial figures supplied in Table 5 lack accuracy to allow segregating the firm's primary business (water) and other businesses.

#### V.1.1 Financial Statements

Table 5 provides a brief financial snapshot of Komunalac. According to its 2001 presentation to HV, the utility has assets worth HRK 34.4 million (USD 5.4 million) and equity and capital reserves of HRK 26.1 million (USD 4.2 million). Total annual income has averaged about HRK 11.8 million over the past few years. This annual level of income generation is somewhat illusory in that it includes all functions of the utility including cemeteries, solid landfill, snow removal, and solid waste.

**Table 5: Komunalac d.o.o. Pakrac Financial Results in 2001**

Financial Results (FY 2001) in HRK							
Municipality	Name of Company	Assets	Equity and Capital Reserves	Total Income	Total Expenditure	After tax	
						Profit	Loss
PAKRAC	KP Pakrac	34,378,679	26,140,977	11,793,546	11,762,781	NA	NA

Source: Hravtske Vode (2003)

The income statement shown in Table 5 reveals that the firm is financially weak. Booz Allen Hamilton adjusted these financial statements to account for many balance sheet items that were found in their operating income statement. With these adjustments made, Komunalac shows' operating losses in two of the past three years. When depreciation and

amortization are taken into consideration, results show that the firm has been operating at a loss in all three of the previous years.

Table 6 calls into question the firms' accuracy and effectiveness with respect to appropriate cost allocation to various utility cost centers. For example, there is no expenditure with respect to water abstraction (or other such fees) even though the provider charges a water abstraction fee. It was impossible to obtain an input/output coefficient for electricity because there was not data supplied with respect to kwh usage allocated to water and other product lines.

**Table 6: Komunalac d.o.o. Adjusted Income Statement (2000-2002)**

Komunalac d.o.o. Pakrac Adjusted Income Statement (in HRK)					
Revenues	2000	2001	%	2002	%
Water Distribution	1,641,606	1,974,216	20%	1,939,848	-2%
Sewerage	290,566	256,788	-12%	271,540	6%
South Collector	1,081,820	919,149	-15%	876,425	-5%
Natural Gas Distribution	4,954,785	5,880,604	19%	6,889,857	17%
Solid Waste Transport By Bins	313,869	279,024	-11%	248,522	-11%
Solid Waste Collection (other)	458,161	605,408	32%	672,219	11%
All Others (Water hook-up, dividends etc)	1,139,602	1,808,239	59%	1,645,112	-9%
<b>Total</b>	<b>9,880,409</b>	<b>11,723,428</b>	<b>19%</b>	<b>12,543,523</b>	<b>7%</b>
Expenses	2000	2001	%	2002	%
Material Expenditures					
Materials	619,934	664,066	7%	493,493	-26%
Fuel	156,137	184,988	18%	189,483	2%
Other Expenditures	1,658,328	930,490	-44%	2,183,415	135%
Gas	4,507,452	5,747,148	28%	6,608,654	15%
Wages and Salary	2,091,128	2,106,017	1%	2,064,241	-2%
Social Employment Taxes (Employee Benefits)	385,111	353,801	-8%	352,482	0%
General Administration (Insurance, etc.)	458,764	690,862	51%	547,961	-21%
Late Payments and Penalties	156,325	352,299	125%	248,389	-29%
<b>Total Expenses (excl. depreciation/ amortization)</b>	<b>10,033,179</b>	<b>11,029,671</b>		<b>12,688,118</b>	
<b>Operational Income</b>	<b>-152,770</b>	<b>693,757</b>		<b>-144,595</b>	
<b>Depreciation and Amortization</b>	<b>119,677</b>	<b>733,109</b>	<b>513%</b>	<b>740,192</b>	<b>1%</b>
<b>Gross Profit</b>	<b>-272,447</b>	<b>-39,352</b>	<b>-86%</b>	<b>-884,787</b>	

Source: Komunalac d.o.o. Pakrac (2003), Booz Allen Hamilton (2003) Estimates

Note: G&A includes concessions, insurance, subsidies, and all other. Numbers may not add due to rounding.

Note: All others does not include debt forgiveness items from Hrvatske Vode and INA. These are more typically balance sheet items and not income statement items.

### ***V.1.2 Accounts Receivable, Customer Billing and Collections***

Komunalac's Managing Director indicated that 100% of all households and businesses are metered for water/wastewater usage. The utility bills and collects directly from their customers. About two utility staff member are assigned the task of billing and collections. Table 7 indicates that local residential households consume about 65% of Komunalac's water services. Business and local industry consume about 35% of Komunalac's water services. Yet, households represent only about 50% of total revenues, which indicates a modest degree of cross-subsidization.

**Table 7: Consumption and Billings By Customer Category<sup>15</sup> (2002)**

Service Provider	Consumed by General Population (%)	Billed to General Customers (%)	Consumed by Business/Other Customers (%)	Billed to Business/Other Customers (%)
Komunalac d.o.o. Pakrac	65%	50%	35%	50%

Source: Komunalac d.o.o. Pakrac (2003)

Table 8 illustrates the collection and billing by customer category. On an annualized basis, Komunalac's total industry and household collection rates are above 90%. However, an investigation of the month over month cash flow indicates that the firm's true 'on-time' collection rate is less than 50%. That is, less than 50% of its customer base pays bills on time, that is, within the 7 to 15 day billing and collection period. Total estimated (current) accounts receivables represent about 1.5 months of estimated billings.

**Table 8: Collection and Billing By Customer Category (2002)**

Service Provider (City)	Collected from General Population Customer / Total Billed per Customer (%)	Collected from Business/Other Customers / Total Billed per Customer (%)	Total Total Collected / Total Billed (%)
Komunalac d.o.o. Pakrac	+/- 95%	+/- 90%	+/- 90%

Source: Komunalac d.o.o. Pakrac (2003)

Modest levels of month over month collections imply that the utility generally pays its contractors (or creditors) late and generally incurs late penalty fees. A cursory review of Komunalac's income statement indicates that about 3% of annual expenses is dedicated exclusively for late payment penalties. With better cash flow management and tightening of collections,

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<sup>15</sup> Includes water and sewerage in most cases, unless specifically designated to the contrary.

the utility could clear some financial operating space for additional investment. By improving cash flow management and reducing late payments, the utility would be able to save close to HRK 300,000 (USD 48,000) per annum.

## V.2 Tariff and Cost Analysis

### V.2.1 Tariff Analysis

In Pakrac the price of water/wastewater services is based on a fee structure proposed by Komunalac and approved by the company's founders (Pakrac and Lipik). Komunalac's basic tariff is structured in five layers as described in Table 9 below.

**Table 9: Komunalac's Basic Tariff Structure**

Komunalac's Water Tariff Structure		
<b>Variable:</b>		
(1)	Water consumption	Volumetric (m <sup>3</sup> )
<b>Fixed:</b>		
(2)	Meter maintenance fee	Na.
(3)	VAT (Ministry of Finance)	22%
(4)	Environmental tax (Croatia water)	Volumetric (m <sup>3</sup> )
(5)	Extraction fee (Croatia water)	Volumetric (m <sup>3</sup> )

Source: Booz Allen Hamilton 2003.

There are two customer categories: domestic and business. Each customer category is charged a flat volumetric rate for water consumption. If there is a shortfall in collection of tariffs, that shortfall is allocated proportionately across all six parts of the tariff.

Table 10 below illustrates the tariff schedule by layered component. Komunalac's water tariff currently does not have automatic inflation adjustment mechanisms (escalators) to accommodate increases in the cost of production inputs due to inflation. A cursory review indicates that local domestic water tariffs have generally not increased since early FY 2000. One of the near-term improvements that the municipality and Komunalac should undertake is to allow the tariff structure to increase in line with a basket of the service provider's operating expenses (i.e., electricity and fuel).

**Table 10: Komunalac Tariff Schedule**

Water Tariff Schedule (in HRK)			
Household Tariffs	2000	2001	2002
(1) Water Consumption (Pakrac/Lipik)	3.32	3.32	3.32
(2) Meter Maintenance fee (Pakrac/Lipik)	NA	NA	NA
(3) VAT (MOF)	0.44	0.44	0.44
(5) Environmental Tax (Croatia Water)	0.80	0.80	0.80
(6) Abstraction Fee (Croatia Water)	0.90	0.90	0.90
Sewerage	1.39	1.39	1.39
<b>Total</b>	<b>6.85</b>	<b>6.85</b>	<b>6.85</b>
Business	2000	2001	2002
(1) Water Consumption (Pakrac/Lipik)	5.74	5.74	5.74
(2) Meter Maintenance fee (Pakrac/Lipik)	NA	NA	NA
(3) VAT (MOF)	1.15	1.15	1.15
(5) Environmental Tax (Croatia Water)	0.80	0.80	0.80
(6) Abstraction Fee (Croatia Water)	0.90	0.90	0.90
Sewerage	1.79	1.79	1.79
<b>Total</b>	<b>10.38</b>	<b>10.38</b>	<b>10.38</b>

Source: Komunalac d.o.o. Pakrac (2003)

According to a 2001 Hrvatska Vode Report, Croatia household water consumption tariffs in fiscal year 2001/2002 ranged between HRK 2.44 /m<sup>3</sup> and HRK 6.94 /m<sup>3</sup>. The average household price of water in Croatia was HRK 4.88 /m<sup>3</sup> in 2001 (or Euro 0.63/m<sup>3</sup>). In comparison to the Croatia average water consumption tariffs, Komunalac's locally determined household water tariff is clearly in the lowest range of Croatian service providers.

### ***V.2.2 Cost Analysis***

Aside from labor, Komunalac's other operating costs appear to be in line with prevailing Croatian water utility cost structures with electric energy, fuel and gross salaries amounting to about 24% of total operating costs in 2002. Salaries at HRK 2.1 million (USD 333,000) represent a significant portion of the service provider's operational expenditure. The utility would benefit enormously by establishing a mechanism to allocate costs across its various products (water, wastewater, sanitation, roads, etc.,). In this manner, the utility would be able to determine whether it is achieving sufficient, and positive, operational efficiency.

Komunalac's cost structure suffers from a high level of fixed costs (i.e. labor and administration). The prevalence of these costs as a portion of total costs clearly indicates that the company's financial difficulties will only be met through a combination of efficiency improvements to limit and/or lower these fixed costs and sharp increases in revenues. Likewise, a reduction in the current level of technical losses could contribute significantly towards restoring the company's financial equilibrium, since about 20% of its costs are linked to the amount of water it uses and technical losses are estimated at around 55%.

According to our estimates, if Komunalac's technical losses were reduced to a more acceptable level of around 25%, assuming a constant level of sales, this would translate into an annual cost reduction of about 10% of its total costs. Such a reduction of costs would result for the Year 2002 in a decline in Komunalac operation losses by about HRK 224,957 (USD 35,707) or 24%. If this water loss reduction were to include the impact on electricity consumption that any such reduction in technical losses would have, the returns associated with Komunalac's ability to limit the level of its technical losses would be even larger.

### *V.2.3 Factors Limiting Full Cost Recovery Tariffs*

Potable water is an economic good and delivery of water to consumers has legitimate costs that have to be recovered. Management of water resources has to be economically efficient and environmentally sustainable. Cost recovery is essential to ensure efficient and sustainable operation of the system. The latter includes the need to ensure that maintenance costs, debt service and depreciation are covered. The price of water, or tariff charged to consumers needs to reflect these costs for sustainability to be ensured.

Komunalac's current tariff structure does not cover depreciation (amortization) and other key costs. Therefore, revenues collected from household water fees do not cover the full economic costs of water supply and wastewater treatment. As a result, the water supply network is in relatively poor condition. Komunalac's current water tariff is currently sufficient for financing essential maintenance and the most urgent of repairs only.

The factors that currently limit Komunalac's ability to fully recover costs through user charges can be summarized as follows:

- **Tariffs Not Automatically Adjusted For Inflation.** Currently no tariff adjustment mechanisms (escalators) exist to accommodate increases in the cost of production inputs due to inflation. The service provider should be



enabled to increase tariffs for all groups of consumers automatically by pegging tariffs to electricity charges.

- **Lack of Working Capital Resources.** The utility does not have liquidity to bridge the gap between the time when costs are incurred and when customer revenue is perceived, resulting in penalties and interest charges on late payments to suppliers. The primary elements of working capital include materials and supplies and cash-working capital. Other elements may include prepayments, unamortized balance of non-annual operations and maintenance (O&M) expenses, and minimum bank balance. An allowance for working capital in the tariff structure would permit the utility to earn a return on the investment required to finance operating costs in advance of the receipt of revenue.<sup>16</sup>

### V.3 Accounting and Financial Management Issues

This section describes current financial accounting practices that may limit the borrowing capacity of Komunalac. A brief description of the primary limitations is presented here with further elaboration in the Action Plan.

#### *V.3.1 Infrequent Auditing and Performance Evaluation*

Komunalac's budget cycle has rarely included any financial audit and auditing for performance review purposes. Pakrac's status as a small enterprise has enabled it to minimize the number of financial audits to one (1) over the past five years. If the utility (and municipality) wants to access debt (credit) financing it is essential that its financial statements be independently reviewed on a more frequent basis.

Furthermore, Croatian budget cycles rarely include auditing for performance review purposes. Although performance evaluations can be tools for improving allocative efficiency in a manner that incremental budgeting alone cannot ensure, no government institution apparently has the responsibility for reviewing and assessing Komunalac's outcomes. The municipality, HV, or some other unit should establish a performance evaluation unit to deal with Komunalac (and other service providers) and to provide guidance on cost measurement and management improvements for operating units.

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<sup>16</sup> A detailed lead-lag study should be performed by the utility to determine a weighted average period of time between cost and revenue. The working capital requirement is the average daily amount of costs multiplied by the average time period determined from the lead-lag review.

### *V.3.2 Accounting and Financial Management Practices*

- **Cash Versus Accrual Basis Accounting.** Komunalac uses cash receipts as a basis for setting and adjusting water rates. However, the utility should maintain its accounts on an accrual basis. This provides a better matching of revenues and expenses and a more accurate assessment of the profitability of the utility than cash-basis accounting.
- **Perform Cash Flow Requirement Projections.** Komunalac and the accounting unit do have very good cash flow documentation. However, the utility does not project their future total revenue and expense requirements, let alone their total cash needs. In order for Komunalac to more effectively manage debt financing, it should develop cash needs (or cash flow) projections. The objective of the cash needs approach for projecting revenue requirements is to ensure that utility revenues are sufficient to recover total cash needs for a given projection period. The term 'cash-needs' as it applies to measuring revenue requirements of the utility, should not be confused with the accounting term "cash" as compared to "accrual" as an accounting method. Cash-needs refer to the total revenues required by the utility to meet its cash expenditures. The cash-needs approach to measuring revenue requirements of the service provider may be evaluated on either the cash or accrual basis of accounting.
- **Cost Accounting System is Deficient.** Komunalac has a very good system for providing fundamental financial information in a timely manner. In addition, the service provider apparently has a consolidated accounting software system, which enables the utility to develop data based on its various cost centers. However, this capability is currently not used to its full extent. The utility's management should spend more time allocating its various costs across cost centers to enable a more accurate tariff calculation.
- **Bad Debt is Not Recognized as an Expense or Reserve Set-Aside.** Bad debt expense can be calculated by identifying the total value of accounts that are greater than six months or more overdue. Customer profiles should be individually reviewed to determine whether there is an ability to pay the service provider. A certain percentage of the accounts receivable can be calculated and defined as 'bad debt expense'. The bad debt expense percentage (or value) should be incorporated into the normal tariff setting process. Bad debt allowances should be periodically reviewed (i.e. every quarter) to determine which accounts are still collectible and which accounts should be written off as bad debt.

### ***V.3.3 Budget Decision Making and Planning***

As discussed earlier, the municipality and Komunalac do not appear to be able to carry out planning beyond assembling a list of proposed project activities. Developing rational priorities or building an informational data base for decision making appear to be currently beyond the local municipal government and Komunalac's capabilities. Komunalac and the local municipal government should develop a coordinated multi-year capital budget with potential financing and tariff implications. A multi-year financial capital budget would enable the municipality and Komunalac to complete more effective budget and capital investment planning.

## **V.4 Water Tariff and Cost Benchmarks**

### ***V.4.1 Water Tariff in Relation to Net Salary***

Precise data on the relationship between the average cost (expenses) paid by Croatian household water consumers and their income and other expenditures apparently does not exist. Nevertheless, some comparison of water prices and household income can be undertaken.

According to a 2001 HV report, Croatia household water consumption tariffs ranged between HRK 2.44 /m<sup>3</sup> and HRK 6.94 /m<sup>3</sup>. The average household price of water in Croatia was HRK 4.88 /m<sup>3</sup> in 2001 (or Euro 0.63/m<sup>3</sup>). The average annual consumption of water by Croatsians is estimated at 60 m<sup>3</sup> per user per year<sup>17</sup>. Multiplying the average water use by the average 2001 Croatian tariff of HRK 4.88 implies that Croatsians paid on average HRK 293 for water in 2001.

According to the Croatian National Statistics Institute, the average 2001 net monthly salary was HRK 3,055. The 2001 average annual net salary is estimated at HRK 36,660. By dividing total average water payment by total annual net salary the total cost of water consumption by an average Croatian household water user is less than 1% of net annual salary<sup>18</sup>.

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<sup>17</sup> Hrvatska Vode, 2001. *Statistical Table*.

<sup>18</sup> A more informative method of analysis would be to compare average Croatian water prices to that of household income (rather than net salary). Household income figures were not available to the consultants at the time of this analysis. Nevertheless, a general conclusion from this type of comparison is that the average cost of water in Croatia for the average Croatian water user is not significant. However, in former war torn areas where employment and income levels may be lower than in Zagreb (for example) the cost of water may represent a significantly greater share of net salary or household income.

### V.4.2 Water Utility Cost and Operational Efficiency

Circumstances in Komunalac are not dissimilar to many Southeastern European (Balkan) countries and the situation could be described as a “low-level equilibrium trap”, in which the quantity and quality of services provided are poor in large part because revenues do not match expenditures. The result is that maintenance is sub-optimal and services deteriorate. Operation and maintenance (O&M) costs tend to escalate, as do the subsidies needed to cover them.

Many water sector parameters indicate that Komunalac is in a similar position to many water utilities in developing countries. As indicated in Table 11, in terms of operational efficiency measures Komunalac has significant scope for operational efficiency improvement.

**Table 11: Comparison of Komunalac With Other Utilities**

Parameter	Unit	Komunalac Water Distribution Network	Other Developing Countries	Developed Countries
Unaccounted for Water	Percent (%) annual Production	55%	40 – 50 %	8 – 17 %
Rate of bill collection	Percent (%)	+/- 90%	40 – 70 %	98 %
Organization efficiency	Employees per 1000 Connections	14	10 – 25	2 – 4

Source: World Bank OED Technical Paper No 5, Laktasi Water Utility Co. Booz Allen Hamilton 2003.

According to the World Bank’s water utility benchmarking toolkit,<sup>19</sup> based on actual performance of the top 25% of developing country utilities, the following “best practice” targets may be realistic goals for Komunalac to achieve:

- UFW of less than twenty-three (23%);
- Five or few staff per 1000 connections; and
- 100 percent coverage with appropriate levels of service for each household.

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<sup>19</sup> See World Bank, “A Scorecard for Water Utilities in Developing Countries,” by Nicola Tynan and Bill Kingdom. 2002.

## VI. Financial Projections

This chapter illustrates Komunalac's "potential" future income stream under certain conditions. A simple financial analysis was possible given that the initial investment costs, plus ongoing maintenance costs result in some direct cost savings and have a positive financial impact. The review of Komunalac's financial statements revealed the limited extent of cost allocation information available. This limitation is reflected in the assumptions used in the financial analysis presented in this chapter.

### VI.1 Analysis Assumptions

The financial analysis presented in this chapter follows the same approach as an economic analysis. Costs and benefits are however based on market prices including taxes and duties not normally included in the economic analysis.

In determining future service provider tariff levels and potential debt structure, BAH considered the service providers estimated future revenue requirements. Some of the assumptions with respect to the utility have already been outlined. Service provider revenues should be sufficient to meet all incurred expenses and to ensure the service providers financial viability. Therefore, the revenues should be sufficient to cover all operating expenses and potential debt service obligations. In addition, the service provider's finances should provide for contingencies, such as bad debts or emergency repairs.

The following financial assumptions were made in developing the financial projections.

- **Inflation/exchange rate:** Croatia's current inflation rate is hovering between 4 and 5%. However, the financial forecast was derived in real terms (net of inflation).
- **Materials, electricity, and supporting services:** The real costs of electricity will rise marginally over the forecast period. However, with a system wide loss reduction program in place these expenditure items could conceivably be reduced over the medium term.
- **Water/Wastewater production:** The overall production of water is assumed to drop somewhat in the first and second year of the forecast as a result of more focused demand management and loss reduction programs.

## **VI.2 Base Case Scenario**

The income statement shown in Table 12 illustrates a base case scenario for Komunalac. Under the base case scenario, Komunalac's tariff structure and UFW at 55% remains virtually the same. However, the utility engages in improved cash management and is subsequently able to significantly reduce its late payments and penalties expenditures. Nevertheless, the utility remains in a steady financial loss position throughout the medium term.

## **VI.3 Optimistic Scenario**

The income statement shown in Table 13 illustrates a more robust financial scenario. Under this scenario, Komunalac is able to reduce its UFW to around 40% by engaging in some small investments as was stipulated by IMGD Engineering consultants. In addition the utility is able to engage in better cash flow management such that its late payments and penalties are reduced or eliminated, and lastly the community begins to raise local tariff levels.

Under this model, household tariffs are increased to HRK 4.26 m<sup>3</sup> in 2004 and industrial tariffs are increased to HRK 6.74 m<sup>3</sup> in 2004. As previously stated, Komunalac has one of the lowest tariffs in Croatia. Although the region is still relatively economically weak, there does appear to be some room for modest tariff increases to bring the utility in line with the national average. As a result, Komunalac gradually reaches a financially positive position over the near term. Komunalac's financial position would dramatically improve, approaching profitability by 2007.

Our sensitivity analysis shows that the breakeven level of household water consumption tariff was determined to be HRK 6.05 m<sup>3</sup>. The break even level of business tariff was determined at HRK 8.67 m<sup>3</sup>.

**Table 12: Base Case Income Statement - Better Cash Management Reduction in late Payments/Penalties**

	2002	2003	2004	2005	2006	2007	2008
<b>Revenues</b>							
Household Water	1,219,013.23	1,219,013.23	1,598,768.13	1,598,768.13	1,598,768.13	1,978,523.03	1,978,523.03
Business Water	693,596.79	693,596.79	805,467.24	805,467.24	962,085.87	962,085.87	1,062,769.28
New Connection	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00
Sewerage	1,147,965.00	1,148,914.02	1,166,122.47	1,189,444.92	1,213,233.82	1,237,498.49	1,262,248.46
Natural Gas Distribution	6,890,805.26	6,975,773.36	7,115,288.83	7,257,594.61	7,402,746.50	7,550,801.43	7,619,522.36
Others	2,542,143.00	2,555,892.01	2,581,450.93	2,607,265.44	2,633,338.09	2,659,671.47	2,686,268.19
<b>Total Sales</b>	<b><u>12,543,523.28</u></b>	<b><u>12,643,189.41</u></b>	<b><u>13,317,097.60</u></b>	<b><u>13,508,540.33</u></b>	<b><u>13,860,172.41</u></b>	<b><u>14,438,580.29</u></b>	<b><u>14,659,331.32</u></b>
<b>Expenses</b>							
Natural Gas Distribution	6,608,652.00	6,627,805.44	6,746,498.72	6,881,428.69	7,019,057.27	7,159,438.41	7,302,627.18
Others	2,187,021.09	2,187,021.09	2,187,021.09	2,187,021.09	2,187,021.09	2,187,021.09	2,187,021.09
Fuel	189,483.00	190,661.73	194,395.34	198,283.25	202,248.91	206,293.89	210,419.77
Materials - Other Expenditures	493,493.00	494,102.54	505,195.53	520,351.40	535,961.94	552,040.80	568,602.02
Salaries and Employment Benefits	2,416,723.00	2,435,107.93	2,483,471.37	2,533,140.80	2,583,803.62	2,635,479.69	2,667,890.84
Late Payments and Penalties	248,389.00	220,563.60	176,450.88	141,160.70	112,928.56	90,342.85	72,274.28
<b>Total Overheads (except Depreciation)</b>	<b><u>12,143,761.09</u></b>	<b><u>12,155,262.32</u></b>	<b><u>12,293,032.93</u></b>	<b><u>12,461,385.93</u></b>	<b><u>12,641,021.39</u></b>	<b><u>12,830,616.73</u></b>	<b><u>13,008,835.18</u></b>
<b>Depreciation and Amortization</b>							
Buildings	0.00	0.00	10,295.83	17,650.00	17,650.00	17,650.00	17,650.00
Equipment	740,833.33	805,000.00	805,000.00	805,000.00	805,000.00	799,166.67	735,000.00
<b>Total Depreciation and Amortization</b>	<b><u>740,833.33</u></b>	<b><u>805,000.00</u></b>	<b><u>815,295.83</u></b>	<b><u>822,650.00</u></b>	<b><u>822,650.00</u></b>	<b><u>816,816.67</u></b>	<b><u>752,650.00</u></b>
Cost of Goods Sold	<u>13,474,594.42</u>	<u>13,472,917.58</u>	<u>13,636,363.68</u>	<u>13,827,911.89</u>	<u>14,023,863.63</u>	<u>14,224,431.41</u>	<u>14,355,793.13</u>
<b>GROSS PROFIT</b>	<b><u>-838,794.69</u></b>	<b><u>-829,728.17</u></b>	<b><u>-319,266.09</u></b>	<b><u>-319,371.56</u></b>	<b><u>-163,691.22</u></b>	<b><u>214,148.89</u></b>	<b><u>303,538.19</u></b>
Administrative Expenses	547,961.00	558,920.00	570,098.00	581,500.00	598,945.00	616,913.00	629,252.00
<b>EBIT</b>	<b><u>-1,386,755.69</u></b>	<b><u>-1,388,648.17</u></b>	<b><u>-889,364.09</u></b>	<b><u>-900,871.56</u></b>	<b><u>-762,636.22</u></b>	<b><u>-402,764.11</u></b>	<b><u>-325,713.81</u></b>

Source: Booz Allen Hamilton Analysis 2003

**Table 13: Income Statement – Optimistic (Increase Tariff Scenario)**

	2002	2003	2004	2005	2006	2007	2008
<b>Revenues</b>							
Household Water	1,260,786.27	1,260,786.27	1,978,523.03	1,978,523.03	1,978,523.03	2,358,277.93	2,358,277.93
Business Water	642,136.38	642,136.38	805,467.24	805,467.24	962,085.87	962,085.87	1,062,769.28
New Connection	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00
Sewerage	1,147,965.00	1,148,914.02	1,166,122.47	1,189,444.92	1,213,233.82	1,237,498.49	1,262,248.46
Natural Gas Distribution	6,890,805.26	6,975,773.36	7,115,288.83	7,257,594.61	7,402,746.50	7,550,801.43	7,619,522.36
Others	2,542,143.00	2,555,892.01	2,581,450.93	2,607,265.44	2,633,338.09	2,659,671.47	2,686,268.19
<b>Total Sales</b>	<b><u>12,533,835.91</u></b>	<b><u>12,633,502.05</u></b>	<b><u>13,696,852.50</u></b>	<b><u>13,888,295.23</u></b>	<b><u>14,239,927.31</u></b>	<b><u>14,818,335.19</u></b>	<b><u>15,039,086.22</u></b>
<b>Expenses (Excluding Depreciation)</b>							
Natural Gas Distribution	6,608,652.00	6,627,805.44	6,746,498.72	6,881,428.69	7,019,057.27	7,159,438.41	7,302,627.18
Others	2,187,021.09	2,187,021.09	2,187,021.09	2,187,021.09	2,187,021.09	2,187,021.09	2,187,021.09
Fuel	189,483.00	190,661.73	194,395.34	198,283.25	202,248.91	206,293.89	210,419.77
Materials - Other Expenditures	493,493.00	494,102.54	505,195.53	520,351.40	535,961.94	552,040.80	568,602.02
Salaries and Employment Benefits	2,416,723.00	2,435,107.93	2,483,471.37	2,533,140.80	2,583,803.62	2,635,479.69	2,667,890.84
Late Payments and Penalties	248,389.00	220,563.60	176,450.88	141,160.70	112,928.56	90,342.85	72,274.28
<b>Total Overheads (except Depreciation)</b>	<b><u>3,348,088.00</u></b>	<b><u>3,340,435.80</u></b>	<b><u>3,359,513.13</u></b>	<b><u>3,392,936.15</u></b>	<b><u>3,434,943.03</u></b>	<b><u>3,484,157.23</u></b>	<b><u>3,519,186.91</u></b>
<b>Depreciation and Amortization</b>							
Buildings	0.00	0.00	10,295.83	17,650.00	17,650.00	17,650.00	17,650.00
Equipment	740,833.33	805,000.00	805,000.00	805,000.00	805,000.00	799,166.67	735,000.00
<b>Total Depreciation and Amortization</b>	<b><u>740,833.33</u></b>	<b><u>805,000.00</u></b>	<b><u>815,295.83</u></b>	<b><u>822,650.00</u></b>	<b><u>822,650.00</u></b>	<b><u>816,816.67</u></b>	<b><u>752,650.00</u></b>
<b>Cost of Goods Sold</b>	<b><u>13,382,317.97</u></b>	<b><u>13,472,917.58</u></b>	<b><u>13,636,363.68</u></b>	<b><u>13,827,911.89</u></b>	<b><u>14,023,863.63</u></b>	<b><u>14,224,431.41</u></b>	<b><u>14,355,793.13</u></b>
<b>GROSS PROFIT</b>	<b><u>-848,482.06</u></b>	<b><u>-839,415.54</u></b>	<b><u>60,488.81</u></b>	<b><u>60,383.34</u></b>	<b><u>216,063.68</u></b>	<b><u>593,903.79</u></b>	<b><u>683,293.09</u></b>
Administrative Expenses	547,961.00	558,920.00	570,098.00	581,500.00	598,945.00	616,913.00	629,252.00
<b>EBIT</b>	<b><u>-1,396,443.06</u></b>	<b><u>-1,398,335.54</u></b>	<b><u>-509,609.19</u></b>	<b><u>-521,116.66</u></b>	<b><u>-382,881.32</u></b>	<b><u>-23,009.21</u></b>	<b><u>54,041.09</u></b>

Source: Booz Allen Hamilton Analysis 2003



## VII. Options for Private Sector Participation

In recent years, governments throughout the world have been turning with increasing frequency to the private sector for help in developing and delivering water and wastewater services. For governments facing growing demands for service, chronic operational and institutional deficiencies, and limited fiscal resources, the private sector is increasingly being recognized as a valuable source of new technology, management expertise, and investment capital. International experience demonstrates that, if properly designed, PSP arrangements can bring dramatic improvements in the quality, availability, and cost-effectiveness of water and wastewater services.

Most literature on PSP identifies the following five options for implementing PSP projects in the water and wastewater sector<sup>20</sup>:

- Service Contracts
- Management Contracts
- Leases
- Build-Operate-Transfer Contracts and Variants
- Concessions

While these are considered to be the main options, it is important to note that in practice, PSP arrangements are often hybrids of these models. For example, management contracts sometimes include capital investment obligations and revenue-sharing provisions common to lease agreements, and leases sometimes transfer responsibility for small-scale investment, rehabilitation, or renewal to the private sector, as is characteristic of concessions. The following sections present a brief overview of the models for PSP, cite examples of where these models are in use, and suggest some lessons drawn from international experience in the use of each option.

### VII.1 Service Contracts

Service contracts are legally binding arrangements between a properly empowered government authority and a private sector contractor to perform specific, usually non-core tasks of the utility, such as meter reading and installation, operations and maintenance, information technology service

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<sup>20</sup> Although divestiture is a common means through which to privatize an enterprise, it is not commonly used in the water sector due to the social and political sensitivity of water as a strategic national resource. As a result, we have not discussed divestiture in any detail.

design and delivery, billing and tariff collection, equipment maintenance, janitorial services, or security services, in exchange for a fee. These contracts are typically competitively bid, and are for short periods of six months to two years, after which they are re-bid. The responsibility for general control and supervision of the utility, as well as any capital investment in the system, remains with the public authority.

While service contracts require only a limited degree of PSP, they nonetheless provide opportunities for the introduction of competition and private sector expertise, and free the utility up to focus on its core business. Because the contract period is short, contractors are subjected to frequent competition, which encourages efficient performance and reduces the cost of the contracts. In large urban areas, different firms can be contracted in separate geographical areas to deliver the same services. Multiple contracts ensure adequate competition and enable the water authority to compare costs and performance on an ongoing basis. Service contracting can be an attractive form of PSP where there is strong political or community opposition to wider involvement of the private sector, opposition to water tariff increases, or where the utility is seeking to shed responsibility for non-core functions. Service contracts can also be used in combination with other, deeper forms of PSP.

Despite the potential long-term benefits to the population as a whole, the introduction of service contracting sometimes has a short-term negative impact on those employees working in the operations being contracted out who may be made redundant. Governments have addressed this dilemma by providing support to those employees in forming and financing private companies to compete for the service contract, or by providing retraining and severance to support employees in finding work in other professions.

Service contracts are used widely throughout the world. For example, the water utility in Santiago de Chile has contracted out services accounting for about half its operating budget, including computer services, engineering consulting services, and repair, maintenance, and rehabilitation of the network. To enhance competition, the Santiago utility has at least two service contracts for each kind of task. These contracts are re-bid every two years in order to maximize price competition.

## **VII.2 Management Contracts**

Management contracts transfer responsibility for the operation and maintenance of government-owned utilities to the private sector. Under such contracts, ownership of the water utility and responsibility for service provision remain with the government. Likewise, the bulk of the commercial

risk and all the capital and investment risks remain with the public authority. Management control and authority, however, is transferred to a private operator, which applies its expertise to improve management systems and practices. Management contracts are generally three to five years in duration. Compensation may be in the form of a fixed fee, as in the case of a fixed fee management contract, or it may be linked to performance indicators, as in the case of a performance-based management contract.

Under a standard *Fixed Fee Management Contract*, remuneration to the private sector contractor is based solely on the payment of a fixed fee in exchange for the provision of specialized personnel who oversee the management of the system.

More sophisticated *Performance-Based Management Contracts* provide for the introduction of greater incentives for efficiency by defining performance targets or contract milestones and basing remuneration, at least in part, on their fulfillment. One variant of this model provides for a profit sharing incentive, in which the operator's remuneration is a combination of a fixed fee plus a share in the profits of the utility. Both the performance-based management contract and the profit sharing variant are effective tools for ensuring that the management contractor shares operating and commercial risks. However, under both models, the public authority still bears the financial risk associated with its responsibility for capital investment.

Performance-based management contracting provides the management contractor with incentives to improve operating efficiency and achieve timely compliance with the performance milestones in its contract. An advantage to these contractual models is the ability to create incentives for the contractor to tackle issues (such as staff development) that are not revenue generating in the short term, but that may establish a foundation for more efficient and sustainable performance over the long term.

Management contracts are most beneficial where the main objective is to rapidly enhance a utility's technical capacity and its efficiency in performing specific tasks, or to prepare for a deeper level of PSP. They are also attractive when there is strong political or public resistance to water tariff increases, where there is concern about handing over control of investments to the private sector, or where there is too little information and data on which to base a longer-term arrangement such as a lease or concession.

Management contracts provide little potential for expanded service coverage because they do not require the private operator to make any capital investments. As a result, they are not recommended if a government has as one of its main objectives accessing private finance for new investments.

The performance-based management contract is the most common management contract model in use around the world today. Some recent examples include:

- The Government of Venezuela awarded a performance-based contract to a Spanish firm in 1997 in order to improve cash flow, creditworthiness, and service in the water sector in Monagas State.
- In Gaza, Palestine, a performance-based management contract was awarded to a private consortium with the goals of increasing the quantity of available water by improving the efficiency of operations and distribution; by improving the quality of the water supply and of wastewater effluent; by improving management through better operations, revenue collections, and customer service; and by strengthening utility institutions through long-term planning and training.
- The Government of Jordan awarded a management contract with a profit sharing incentive aimed at addressing chronic operational, management, and financial deficiencies characterized by high levels of unaccounted-for water, rapidly increasing incremental costs of water, poor financial performance, and inadequate cost recovery mechanisms.

These experiences, and others, have shown that the incentive-based approach of performance-based management contracts is the most effective in producing positive results for both the public and the private sectors.

### **VII.3 Lease Agreement**

Under a lease, a private firm (Lessee) leases the assets of a utility from a properly empowered government authority (Lessor) and assumes the responsibility for operations, maintenance, and asset renewal for a period usually between ten and fifteen years. Typically under a lease, the tariff is used to pay the “Lessee Fee”, which remunerates the Lessee for his costs, plus a reasonable return. The remainder of the tariff goes to the government and is used to fund capital investment in system expansion, rehabilitation, and other improvements. As the Lessee’s fee is dependent upon tariff revenues, the lessee assumes much of the commercial risk of the operations.

The private operator’s remuneration is directly linked to the charges it collects from customers under a well-structured lease. From these charges, the Lessee pays the public utility a rental fee intended to cover the public utility’s capital costs for system expansion and rehabilitation. The Lessee’s profitability will therefore depend to a large degree upon how much it can reduce costs, while still meeting the quality standards set forth in the lease.

Best practice leases have built-in incentives that encourage the private operators to implement efficient billing and collection procedures to improve the collection ratio from customers (including government agencies). The Lessee also has an incentive to implement aggressive policies aimed at expanding service coverage to increase the revenue base (although it is important to note that the government retains responsibility for carrying out and financing expansion), to reduce operating costs in order to maximize profits, and to carry out regular preventative maintenance to increase the reliability and longevity of plant and equipment.

Under a lease, the public utility retains title to the assets and bears the responsibility for financing and planning capital investments and rehabilitation. It is therefore incumbent upon the government to raise financing and coordinate its capital investment program closely with the private contractor's operational and commercial program.

Leases are most appropriate where there is scope for large gains in operating efficiency but only limited need or scope for new investments. Leases have also sometimes been advocated as stepping stones toward a deeper level of PSP through concessions. However, their administrative complexity and the demands they place on governments are nearly as great as those of concessions, so a lease is a much bigger first step than a management contract. Due to their complexity, leases generally require that an independent regulatory body be established to monitor and enforce the private operator's fulfillment of its obligations.

Leases have been used widely in the water sector in France and Spain, and are currently in place in Guinea, the Czech Republic, and Senegal.

#### **VII.4 Build-Operate-Transfer (BOT) Contracts and Variants**

Build-Operate-Transfer (BOT), build-own-operate (BOO), and similar arrangements are contracts specifically designed for greenfield water supply or wastewater projects or investments in water supply and/or wastewater infrastructure that require extensive rehabilitation. Under such arrangements, the private sector typically designs, constructs and operates facilities for a limited period of from 15 to 30 years, after which time the contractor relinquishes all rights or title to the assets to the public utility. Under a build-own-operate (BOO) contract, the assets remain indefinitely with the private partner.

In a BOT for bulk water, the government or the distribution utility will typically pay the BOT partner for water from the project at a price calculated over the life of the contract to cover its construction and operating costs and provide a reasonable return. The contract between the private partner and the

utility is usually on a “take-or-pay” basis, obligating the utility to pay for a specified quantity of water whether or not that quantity is consumed. These places all demand risk on the distribution utility. Alternatively, the distribution utility might pay a capacity charge and a consumption charge, an arrangement that shares the demand risk between the utility and the private partner.

Similar arrangements, called “offtake” agreements, are used for wastewater treatment BOTs. In this case, the government is obligated to pay the private partner to treat a pre-defined minimum volume of wastewater, whether or not that quantity is actually delivered for treatment.

These types of arrangements have not been used extensively in the water and wastewater sector for a number of reasons. While they are attractive for new plants that require large amounts of financing, such as large water treatment plants, bulk water supply BOTs are not suitable in systems with such major problems as high unaccounted-for-water or poorly maintained water distribution systems, where the increase in supply and pressure can further exacerbate problems in the system. Another problem with BOTs is that, because water production and distribution are the responsibility of separate entities, it can be very difficult to tie increases in productive capacity with increases in demand.

While the BOT model can be a very attractive way of generating the financing needed to construct a new wastewater treatment facility, it is only viable if government is prepared to charge consumers a tariff that will fully remunerate the BOT operator for its full cost of operation, maintenance, and depreciation. In most cases, tariffs for wastewater treatment are bundled with those for water. When this is not the case, it is very difficult, if not impossible, to collect payment for services.

Effective implementation of BOT type contracts requires careful attention to the design of tender documents and can involve a relatively lengthy bidding process. Experience with some BOTs shows that they achieve some savings in capital construction costs and facilitated more rapid investment in infrastructure. However, they can be an expensive way of substituting private debt for public debt if there is a take-or-pay contract for sale of bulk water to the retail utility. Additionally, many BOTs have failed to deliver optimal outcomes for government or consumers because the government’s agency responsible for negotiating allowed too much of the risk to remain with government, especially where foreign exchange guarantees are provided, or where take-or-pay contracts are signed.

BOTs and their variants have been used for water treatment in such countries as Malaysia, Australia, and for sewage treatment in Chile and New

Zealand. In Zagreb, the first-ever BOT for wastewater treatment in Croatia has been initiated with funding from the EBRD.

## **VII.5 Concessions**

Under a concession, the private contractor, or Concessionaire, bears overall responsibility for the services, including operation, maintenance, and management, as well as capital investments for rehabilitation, renewal, and the expansion of services. The fixed assets either remain the property of the public authority or revert to public ownership at the end of the concession period. Concession contracts usually have a duration of twenty to thirty years, depending on the level of investments and the period required for the Concessionaire to recover its investments plus a reasonable rate of return.

Concessions are typically awarded based on price, with the contract going to the bidder proposing to operate the utility and meet the investment targets for the lowest tariff. The concession is governed by a contract which sets out such conditions as the main performance targets for coverage and quality, performance standards, arrangements for capital investment, mechanisms for adjusting tariffs, and arrangements for dispute resolution. Penalties are imposed if the Concessionaire fails to comply with the performance targets specified in the contract.

The Concessionaire is paid for its services directly by the consumer, based on the contractually set tariff, which is adjustable over the life of the contract. The Concessionaire retains the balance of revenues after paying back any taxes and charges levied on consumers by the public authority. If expenses exceed revenues, the Concessionaire must absorb these losses. Combining the responsibility for operations and investments under a concession agreement provides the Concessionaire with an incentive to make efficient decisions regarding investment and technological innovations, because the operator will benefit directly from any efficiency improvements.

The main advantage of a concession is that it passes full responsibility for operations, maintenance, rehabilitation, renewal, and system expansion to the private sector and so creates incentives for efficiency in all the utility's activities. Therefore, concessions are an attractive option where large investments are required to expand coverage or to improve the quality of services. However, concessions are administratively complex undertakings for governments, because they confer a long-term monopoly on the concessionaire and thus require rigorous monitoring and enforcement. The quality of regulation is therefore important in determining the success of the concession, particularly the distribution of its benefits between the

concessionaire (in profits) and consumers (in lower prices and improved service).

Concessions have a long history of use in the developed world, and are increasingly being used in developing countries such as Colombia, Argentina, Bulgaria, Romania, the Philippines, and Malaysia.

## **VII.6 Summary and Implications**

The following tables, 14, 15 and 16, summarize the aspects of each option for PSP and the considerations for government when selecting an option.



**Table 14: Allocation of Key Responsibilities in Different PSP Options**

Type	Asset Ownership	Operations & Maintenance	Capital Investment	Commercial Risk	Duration
Service Contract	Public	Public + Private	Public	Public	1 – 2 yrs
Management Contract	Public	Private	Public	Public	3 – 5 yrs
Lease	Public	Private	Public	Shared	8 – 15 years
Concession/BOT	Public	Private	Private	Private	20 – 30 yrs

Source: Severn Trent Water International

**Table 15: What do Governments Want and Which PSP Option Delivers?**

Type	Technical Expertise	Managerial Expertise	Operating Efficiency	Investment Efficiency	Investment in Bulk Capacity	Investment in Distribution System	Responsive to Customers	Insulation from Political Intervention
Service Contract	Y	N	N	N	N	N	N	N
Management Contract*	Y	Y	Y	N	N	N	P	P
Lease	Y	Y	Y	N	N	N	Y	Y
Concession/BOT	Y	Y	Y	Y	Y	Y	Y	Y

\* *Management contract with performance incentives*

Source: Severn Trent Water International

**Key:** Y = Objective can be satisfied

N = Objective cannot be satisfied

P = Objective can be partially satisfied

**Table 16: How Much do Governments Have to Offer to Get What They Want?**

Type	Stakeholder support and political commitment	Cost recovery tariffs	Good information about the system	Developed regulatory framework	Good country financial rating
Service Contract	Unimportant	Not necessary in the short term	Possible to proceed with only limited information	Minimal monitoring capacity needed	Not necessary
Management Contract*	Low to moderate levels needed	Preferred but not necessary in the short term	Sufficient information required to set incentives	Moderate monitoring capacity needed	Not necessary
Lease	Moderate to high levels needed	Necessary	Good information system required	Strong regulatory capacity needed	Not necessary
Concession/BOT	High levels needed	Necessary	Good information system required	Strong regulatory capacity needed	Higher rating will reduce costs

\* *Management contract with performance incentives*

Source: Severn Trent Water International

## VIII. Private Sector Participation in Pakrac

Pakrac already has some experience with PSP. Specifically, Komunalac has entered into an outsourcing arrangement for city cleaning and snow removal.<sup>21</sup> The contract is rebid every two to three years and is monitored by the Pakrac City Council. Both the city and Komunalac are satisfied with the arrangement and indicated their support in principle for the concept of PSP.

The following issues and challenges have a direct impact on the potential for PSP in water and sewerage services in the Pakrac area:

- **Asset Ownership:** There is a general lack of clarity over the legal ownership of Komunalac's capital assets. Although corporate ownership of the company is vested in the municipalities of Pakrac and Lipik, ownership of the assets themselves has not been determined. Specifically, the issue of HV's right to ownership is a complicated one. HV has provided much of the post-war funding for capital investment and in theory, this investment is being repaid through a debt for equity swap with the utility. However, in practice, HV has not taken steps to assume ownership of Komunalac or to define the terms and conditions of its ownership share. By law, HV cannot own more than 49% of any utility and therefore there is no possibility that it may own a majority share. The situation is additionally complicated because there is also a law in Croatia stating that in the war-torn areas, any capital investment funds provided by HV cannot legally form the basis of future shares in the ownership of the company receiving the funds. Nonetheless, until this issue is brought to some sort of legal test, the question of ownership will remain unanswered.
- **Limited Potential for Tariff Increases:** As stated previously, tariff increases in the war torn areas of Croatia are still considered very controversial. In Pakrac, the potential for tariff increases is dependent upon the political will of the City Council. In our preliminary discussions with City officials, there did not appear to be any willingness to increase the tariff in the near term.

Table 17 sets out the options for change, including the legal and technical implications and financial attractiveness, to the various types of PSP described in the previous section. Also include, for the sake of comparison, is an option of keeping the Status Quo or "Doing nothing."

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<sup>21</sup> In our meetings, Komunalac officials called the arrangement a "concession," but we did not receive sufficient detailed information to verify that the contract is in fact a concession rather than a service contract or another form of outsourcing.

**Table 17: PSP Options in Komunalac**

Type of Contract	Legal Implication	Technical Implication	Financial Attractiveness	General Comment
<b>Status Quo</b>	<ul style="list-style-type: none"> <li>▶ No transfer of any legal or regulatory risk</li> <li>▶ No legislation changes required</li> <li>▶ Need to clarify HV share of ownership</li> </ul>	<ul style="list-style-type: none"> <li>▶ Company lacks the resources to fund major works or investment in dam construction needed to supplement raw water</li> <li>▶ Company lacks in-house skills or capacity to carry out major portions of capital investment program</li> </ul>	<ul style="list-style-type: none"> <li>▶ No or very limited internal funding available to finance capital expenditure</li> <li>▶ Inability to attract external private funding</li> <li>▶ Likely that company will continue to suffer losses</li> </ul>	<ul style="list-style-type: none"> <li>▶ Generally the company's financial situation will continue to deteriorate</li> <li>▶ Continued risk that system capacity will be inadequate during dry season</li> </ul>
<b>Service Contract</b>	<ul style="list-style-type: none"> <li>▶ Limited transfer of legal and regulatory risk</li> <li>▶ No legislation or regulatory change required</li> <li>▶ May be legally difficult to reduce utility staff if required</li> </ul>	<ul style="list-style-type: none"> <li>▶ Limited potential long term benefits</li> </ul>	<ul style="list-style-type: none"> <li>▶ A service contract could be awarded for billings and collections. This could have short term benefits but not likely to be long term solution</li> <li>▶ No private sector funding</li> </ul>	<ul style="list-style-type: none"> <li>▶ Enables the company to engage specific skills required</li> <li>▶ The small size of the Komunalac operation may limit the benefits to be gained from outsourcing</li> </ul>
<b>Management Contract</b>	<ul style="list-style-type: none"> <li>▶ No legislation or regulatory change required</li> </ul>	<ul style="list-style-type: none"> <li>▶ Can structure a performance-based arrangement with targets for UFW reduction and other technical parameters, but benefits are limited by lack of private funds for capital investment</li> <li>▶ May help utility to improve capital planning or execution of capex program should these responsibilities be transferred by City Council</li> </ul>	<ul style="list-style-type: none"> <li>▶ No private sector funding</li> <li>▶ May increase utility's ability to attract external private funds</li> <li>▶ Financial improvements possible if targets are set appropriately for cost reduction and revenue enhancement</li> </ul>	<ul style="list-style-type: none"> <li>▶ Workforce sometimes unwilling to take instruction from new or outside management team</li> <li>▶ Could help to strengthen overall corporate planning</li> <li>▶ Size of Komunalac operation may be too small to justify cost of management contract and may not generate interest amongst potential private investors</li> </ul>

Source: Booz Allen Hamilton April 2003

Type of Contract	Legal Implication	Technical Implication	Financial Attractiveness	General Comment
<b>Lease</b>	<ul style="list-style-type: none"> <li>▶ Transfers much of the regulatory risk</li> <li>▶ Legislative change may be required</li> <li>▶ Need to clarify HV ownership issue</li> <li>▶ Labor transition or redundancy issues may pose legal challenge</li> <li>▶ Requires sophisticated regulatory capacity</li> </ul>	<ul style="list-style-type: none"> <li>▶ The majority of capital investment responsibilities remain in the public sector's hands</li> <li>▶ Will not provide funding for construction of dam or drilling for new wells</li> </ul>	<ul style="list-style-type: none"> <li>▶ Requires that a cost recovery tariff be charged</li> <li>▶ Likely staff will not transfer to lessee without first payment of redundancy package</li> <li>▶ Limited private sector funding</li> <li>▶ Major part of commercial risk transferred to lessee</li> <li>▶ May take time to arrange</li> </ul>	<ul style="list-style-type: none"> <li>▶ Complicated bidding process</li> <li>▶ Takes time to prepare contract and appoint lessee</li> <li>▶ Doubtful whether qualified operator would be interested in contract due to small size of Komunalac operation</li> <li>▶ No guarantee of successful award of contract</li> </ul>
<b>Concession/BOT</b>	<ul style="list-style-type: none"> <li>▶ Full transfer of regulatory risk</li> <li>▶ Significant legislative change likely required</li> <li>▶ Must resolve issue of HV share of ownership</li> <li>▶ Labor transition or redundancy issues may pose legal challenge</li> <li>▶ Requires sophisticated regulatory capacity</li> </ul>	<ul style="list-style-type: none"> <li>▶ BOT could be appropriate solution for construction of dam if grant funding is available</li> <li>▶ Likely to greatly improve system efficiency</li> </ul>	<ul style="list-style-type: none"> <li>▶ Requires that a cost recovery tariff be charged</li> <li>▶ Investment funded by private sector</li> <li>▶ Commercial risk transferred entirely to private sector</li> <li>▶ May take time to mobilize external funding</li> <li>▶ Likely staff will not transfer without first payment of redundancy package</li> </ul>	<ul style="list-style-type: none"> <li>▶ BOT could be good solution for construction of dam, but due to small size of Komunalac operation and lack of financial resources, grant funding would most likely be required to finance</li> <li>▶ Complicated bidding process</li> <li>▶ Takes time to prepare and procure contract</li> <li>▶ Doubtful whether qualified operators would be interested due to small size of Komunalac operation</li> <li>▶ No guarantee of successful award of contract</li> </ul>

Source: Booz Allen Hamilton April 2003



Based on our analysis of the situation in the Komunalac service area, as well as our understanding of the overall legal, regulatory, economic, and political climate prevailing in Croatia, we have eliminated leases and concessions as viable PSP options in Pakrac. Komunalac's current financial situation, compounded by the lack of political support for the institution of a cost recovering tariff, make both options not only unviable from a financial standpoint, but unattractive to private potential private operators. From among the remaining options, we recommend that the following be explored in more detail.

### **VIII.1 Outsourcing Non-Core Functions**

Currently, Komunalac outsources street cleaning and snow removal services, with contracts let every two to three years. The utility and the city are very satisfied with this arrangement, and have indicated their willingness to explore other areas where outsourcing is possible. We recommend that the utility consider evaluating further this potential in such areas as billings and collections. In addition, should the Office of Utility Planning transfer responsibility for capital planning and works to Komunalac, we recommend that these functions be outsourced.

### **VIII.2 Performance-Based Management Contract**

While leases and concessions are not viable options for Pakrac, there is the potential for improved management and increased efficiency through a performance-based management contract. It is important to note, however, that it is unlikely that an international private operator would find such a contract attractive due to the small size of the Komunalac operation and the utility's limited budget. Rather, we recommend that Komunalac explore the potential for procuring the services of a domestic operator to manage the utility, with compensation in the form of a fixed fee plus performance incentives.

## **IX. Next Steps**

Table 18 below provides a brief action plan for Komunalac to stimulate additional effectiveness of cash flow and financial management. The utility is currently doing an effective job of financial management under current circumstances. The action plan outlined in Table 18 provides some suggestions to improve operational efficiency.



**Table 18: Proposed Action Plan for Komunalac**

Action Items		Description
I. Corporate Reorganization	<b>a. Define Service Provider Assets</b>	<ul style="list-style-type: none"> <li>▶ The water utility should, in conjunction with the local municipality, develop or revise its current service agreement with the municipality, by issuing: <ul style="list-style-type: none"> <li>– A broad statement of the intended use of the assets;</li> <li>– A complete inventory of the assets and a description and other documentation of their physical condition and depreciable value.</li> </ul> </li> <li>▶ The utility should periodically revalue the transferred assets for purposes of depreciation, disposition and balance sheet adjustments in accordance with applicable law, and corresponding amendments to the property transfer agreement to reflect these revaluations;</li> <li>▶ Periodic amendments to the inventory of the assets transferred to reflect dispositions and acquisitions.</li> </ul>
	<b>b. Review and Conclude Service Agreement Between the Utility and City Administration</b>	<ul style="list-style-type: none"> <li>▶ The local administration and the utility already have a modest service agreement in place, but this service agreement should be reviewed in light of the utility's requirements for additional capital spending for leakage reduction etc.</li> <li>▶ The service agreement should project tariff and service levels for three to five years, but should be subject to periodic (perhaps annual) review and revision by mutual agreement. The service agreement should include the following major elements: <ul style="list-style-type: none"> <li>– A statement of the purposes of the agreement;</li> <li>– A general statement of the rights and obligations of the utility, including the rights to set its own operating, management, personnel, and other business policies; to take all reasonable and necessary steps to bill and collect tariffs from customers; to deliver services at a level consistent with revenues, and the obligations to operate as a financially-sustainable enterprise, to take all actions reasonably required to enable it to deliver the agreed level of services, and to resolve all disputes regarding non-compliance with the service agreement in proceedings before the local independent regulatory body;</li> <li>– A general statement of the rights and obligations of the Administration, including the right to monitor compliance with the service agreement, and the obligations to permit the Enterprise to exercise its rights and fulfill its obligations without inappropriate political influence or interference by the Administration, to support a level of tariffs appropriate to the agreed level of service.</li> <li>– Statements of long-term and short-term goals for water and wastewater service levels, including objective measures and specific schedules. Such goals could include improved water supply service duration and pressures, reduced water supply system leakage, improved water and wastewater system maintenance, reduced energy use, and improved water and effluent quality;</li> <li>– A requirement for the utility to prepare and execute a capital repair and capital investment plan, in coordination with the City's overall plan for social and economic development;</li> <li>– A requirement for the utility to develop and undertake (and for the Municipal Administration to support) a program of customer education and improved customer relations;</li> <li>– Requirements for improved accounting by the utility and for period audits and publication of its financial results;</li> <li>– Requirements for periodic reporting by the Administration and by the utility on performance (or non-performance) of their respective obligations under the service agreement;</li> <li>– Statements of any conditions of the Administration's or the Utility's obligations, including availability of funding for required capital repairs and capital investments, absence of material adverse changes in law, and absence of <i>force majeure</i>;</li> <li>– A statement that the service levels called for by the agreement will be periodically reviewed and revised by mutual agreement; and</li> <li>– A general statement of intent by the Administration and the Enterprise to cooperate with one another, use their best efforts to fulfill their respective obligations and to allow the other party to exercise its rights under the service agreement.</li> </ul> </li> </ul>

Action Items		Description
II. Regulatory Issues	<b><i>Include Water and Wastewater Regulation in the Existing Energy Regulatory Commission's Responsibilities.</i></b>	<ul style="list-style-type: none"> <li>▶ All decisions of the regulatory body regarding new tariffs will be made only after a public hearing (preceded by publication of adequate prior written notice of the hearing), at which all interested parties will have the right to be heard and to present relevant evidence;</li> <li>▶ All decisions of the regulatory body will be in writing, stating the evidence presented and the reasons for its decision;</li> <li>▶ All decisions of the regulatory body will be published in the local mass media and will be available to all interested parties at no cost (copies to be provided at actual cost);</li> <li>▶ So long as the regulatory body acts within its jurisdiction, according to the procedures described in the Charter and according to applicable law, the City Administration will not interfere with its operations.</li> </ul>
	<b><i>Establish Automatic Inflation Escalator Mechanism In Tariffs</i></b>	<ul style="list-style-type: none"> <li>▶ The tariff approval process should include an indexed inflation escalator mechanism. This mechanism would allow the utility to adjust water and wastewater tariffs on their own, without further approval of the tariff regulator, to reflect inflationary increases in the cost of major inputs, especially energy costs, according to inflation indices issued periodically (e.g., quarterly) by the appropriate government agency.</li> </ul>
III. Management Improvement	<b><i>Increase Emphasis on Financial Reporting and Accountability (Management Reporting)</i></b>	<ul style="list-style-type: none"> <li>▶ Monthly reports should include Trial Balance, Monthly Cash Flow, and Profit and Loss statements. All financial statements should have columns comparing forecast versus actual (not adjusted for revenues received). Accounts receivable should be analyzed (bad debt expense) on a monthly basis. The utility should annually undergo an external audit. Further, the utility should begin the process of allocating its costs among its various cost centers</li> </ul>
	<b><i>Implement an Efficient Cost Accounting System</i></b>	<ul style="list-style-type: none"> <li>▶ The Accounting Department has a less than fully effective cost accounting system in place. Installing a consolidated cost accounting computer program will greatly enhance the productivity of numerous operations. In addition, the utility manager will be able to more fully understand the utility's production costs.</li> </ul>
	<b><i>Revalue Assets</i></b>	<ul style="list-style-type: none"> <li>▶ The utility should consider reviewing whether it needs to hire a professional valuation expert who would conduct an on-site physical valuation. Based on the results of such an exercise, the utility should include the calculated revalued depreciation in its tariff. Currently, the tariff structure includes a depreciation value which may not accurately reflect the actual value of the utility's assets.</li> </ul>

Action Items		Description
IV. Operation Efficiency Issues	<b>Reduce Production Inefficiencies</b>	▶ The utility should compare current actual production with factory-designed nameplate capacity and develop a production efficiency program that will be included in the new service agreement with the Administration.
	<b>Reduce Delivery Losses</b>	▶ The utility should determine the magnitude of delivery losses and develop a loss reduction program that will be included in the new service agreement with the Administration as well as capital improvement planning.
	<b>Stream-line the Enterprise Employment</b>	▶ The utility management should evaluate total staff requirements to determine if possible staff redundancies and production inefficiencies exist. Where possible, management should reduce staffing requirements through transfers and attrition.
V. PSP	<b>Outsourcing of Non-Core Functions</b>	▶ The utility should explore the options for outsourcing non-core services as part of a larger strategy to horizontally unbundle and contract out those functions that are not directly related to the provision of water and wastewater services.
	<b>Performance-Based Management Contract</b>	▶ The utility should consider procuring a performance-based management contract primarily aimed at attracting domestic firms as bidders, with compensation a combination of a fixed fee plus performance incentives.

Source: Booz Allen Hamilton April 2003

### Annex A: List of Persons Consulted / Contacted

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1	Michael Avery	Booz Allen Hamilton		(385-1) 4882-831	
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3	Stjepan Gabric	World Bank	Trg J. F. Kennedy 6B/III Zagreb, 10000	Tel: (385-1) 235 7275 Fax: (385-1) 235- 7200	<a href="mailto:Sgabric@worldbank.org">Sgabric@worldbank.org</a>
4	Juri Kovac	IMGD		(385-1) 4555-443	<a href="mailto:imgd@zg.tel.hr">imgd@zg.tel.hr</a>
5	Albert Menegoni	Municipality of Lipik	34551 Lipik M. Terezije 27	Tel: 034/421-531 034/421-001	
6	Maris Mikelsons	Urban Institute (Croatia)		(385-1) 485-4794	<a href="mailto:Mikelsons@aol.com">Mikelsons@aol.com</a>
7	Maridan Perebon	Municipality of Pakrac		Tel: 034/411-080 034/313-191 Fax: 034/411-081	
8	Michael Schaeffer	Booz-Allen Hamilton (Consultant)		Tel: (202) 244-1322	<a href="mailto:MGSchaeffer1@aol.com">MGSchaeffer1@aol.com</a>
9	Kathleen Slattery	IP3		(202) 466-8930	<a href="mailto:K_Slattery@IP3.org">K_Slattery@IP3.org</a>
10	Zdrauko Vostri	Direktor Komunalac d.o.o. Pakrac		Tel: 034-411-339 Fax: 034-411-337	

Source: Booz Allen Hamilton April 2003

## Annex B. Benchmarking Indicators - Definitions

This section provides a brief discussion of water / wastewater indicators and their definition. These are commonly used indicators and definitions and are periodically used in the financial, institutional and engineering review.<sup>22</sup>

### *Coverage*

Coverage is a key development indicator. Both coverage indicators listed in Table 19, are impacted by currency of census data. The need to estimate populations served by stand posts will affect the confidence that can be placed in the water coverage measure. Coverage provides insights into the extent of the infrastructure provided but not aspects of quality of service.

**Table 19: Coverage Indicators**

INDICATOR	UNIT	CONCEPT
Water Coverage	%	Population with easy access to water services (either with direct service connection or within 200m of a standpost)/total population under utility's nominal responsibility, expressed in percentage.
Sewerage Coverage	%	Population with sewerage services (direct service connection)/total population under utility's notional responsibility, expressed in percentage.

### *Water Consumption and Production*

Theoretically the “best” water consumption indicator is expressed in terms of liters per connection per day (lpcd), as shown in Table 20. However there are data problems, including:

- Lack of accurate total consumption data (for example from universal metering)
- Poor quality, or out of date, census data

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<sup>22</sup> The indicators and definitions are predominately taken from “Russia Water Loan Feasibility Assessment: Overview” Prepared for United States Agency For International Development, Contract No. CCS-0008-C-00-2057-00, Task Order 87. by Alexander Gamota, Michael Schaeffer, Samuel Coxson, Ernie Slingsby et al. In addition, several definitions were obtained from The Benchmarking Startup Kit, World Bank, 2003 obtained from the following website addresses:  
[http://www.worldbank.org/html/fpd/water/topics/bench\\_networkutility.html#English](http://www.worldbank.org/html/fpd/water/topics/bench_networkutility.html#English) and,  
[http://www.worldbank.org/html/fpd/water/topics/bench\\_network.html](http://www.worldbank.org/html/fpd/water/topics/bench_network.html).

**Table 20: Water Consumption Indicators**

INDICATOR	UNIT	CONCEPT
Water Production	<ul style="list-style-type: none"> <li>▶ lpcd</li> <li>▶ m<sup>3</sup>/conn/m</li> <li>▶ m<sup>3</sup>/hh<sup>1</sup>/m</li> </ul>	Total annual water supplied to the distribution system (including purchased water, if any) expressed by population served per day; by connection per month and by household per month.
Water Consumption	<ul style="list-style-type: none"> <li>▶ lpcd</li> <li>▶ m<sup>3</sup>/conn/m</li> <li>▶ m<sup>3</sup>/hh<sup>1</sup>/m</li> </ul>	Total annual water sold expressed by population served per day; by connection per month and by household per month
Metered Water Consumption	<ul style="list-style-type: none"> <li>▶ lpcd</li> <li>▶ m<sup>3</sup>/conn/m</li> <li>▶ m<sup>3</sup>/hh<sup>1</sup>/m</li> </ul>	Total annual metered water consumed expressed by metered population served per day; by metered connection per month and by metered household per month.

While the accuracy of service populations may need improvement, utilities are often more confident in the number of connections in their system, and the number of households they supply. In addition water production figures may be known more reliably than those for water consumption. To draw on these or other sources of (potentially) more reliable data a number of indicators have been included. These will allow trending analyses to be undertaken within a utility. Inter utility comparisons will be more difficult, however, given the different mix of household sizes and dwellings served by one connection. This is especially the case between utilities in different countries. Homogeneity of household size, and dwellings per connection, within a country will allow informed in-country comparisons to be made.

### ***Unaccounted for Water (UFW)***

Unaccounted for water represents water that has been produced and is “lost” before it reaches the customer (either through leaks, through theft, or through legal but non monitored usage). Part of this unaccounted for water can be saved by appropriate technical and managerial actions. It can then be used to meet currently unsatisfied demand (and hence increase revenues to the utility), or to defer future capital expenditures to provide additional supply (and hence reduce costs to the utility). There is a debate as to the most appropriate measure of unaccounted for water. A percentage approach can make utilities with high levels of consumption, or compact networks, look to be better performing than those with low levels of consumption or extensive networks. To capture these different perspectives the reporting of three measures of unaccounted for water has become the norm, as shown in Table 21.

**Table 21: Unaccounted For Water Indicator**

INDICATOR	UNIT	CONCEPT
Unaccounted-for-Water (UFW)	<ul style="list-style-type: none"> <li>▶ %</li> <li>▶ m<sup>3</sup>/km/d</li> <li>▶ m<sup>3</sup>/conn/d</li> </ul>	Difference between water supplied and water sold expressed as a percentage of net water supplied; as volume of water “lost” per km of water distribution network per day; and volume of water “lost” per water connection per day.

### *Metering Practices*

Metering of customers is considered good practice. It allows customers the opportunity to influence their water bills, and provides utilities with tools and information to allow them to better manage their systems. The indicators described in Table 22, provide two separate perspectives on the issue, both of which are relevant in their own right. Taken together the indicators provide insights into the effectiveness of a metering installation strategy (the ratio proportion of water sold that is metered divided by the proportion of connections that are metered indicates the extent to which a utility is targeting large water users as the highest priority).

**Table 22: Metering Indicators**

INDICATOR	UNIT	CONCEPT
Proportion of connections that are metered	%	Total number of connections with operating meter/ total number of connections, expressed in percentage
Proportion of water sold that is metered	%	Volume of water sold that is metered/ Total volume of water sold, expressed in percentage

### *Pipe Network Performance*

The number of pipe breaks, relative to the scale of the system, is a measure of the ability of the pipe network to provide a service to customers. The length of the network and the number of connections can normalize the number of breaks. The rate of water pipe breaks can also be seen as a surrogate for the general state of the network, although it reflects operation and maintenance practices too. It must be recognized, however, that highly aggregated reporting can hide the fact that sections of the network may be perpetually failing, whilst much of the remainder is in reasonable condition. As shown in Table 23, sewer blockages are, likewise, a measure of the ability of the sewer network to provide a service to customers. Blockages can reflect a number of issues including the effectiveness of routine operations and maintenance activities, the hydraulic performance of the network, and the general condition of the pipes.

**Table 23: Pipe Network Indicator**

INDICATOR	UNIT	CONCEPT
Pipe Breaks	<ul style="list-style-type: none"> <li>▶ breaks/km/yr.</li> <li>▶ breaks/conn/yr.</li> </ul>	Total number of pipe breaks per year expressed per km of the water distribution network; and per number of water connections
Sewerage Blockages	<ul style="list-style-type: none"> <li>▶ blockages/km/yr.</li> <li>▶ blockages/conn/yr.</li> </ul>	Total number of blockages per year expressed per km of sewers; and per number of sewerage connections.

### *Cost and Staffing*

Unit operational costs provide a “bottom line” assessment of the mix of resources used to achieve the outputs required. Table 24 shows that the preferred denominator related to operational costs are the amounts of water sold. This ratio then reflects the cost of providing water at the customer take off point.

Lack of universal metering, doubtful accuracy of many household meters, and a focus in the past on water production, mean that an alternative measure of operational cost per cubic meter of water produced is also relevant in the short term. Staff costs are traditionally a major component of operating costs. Understanding staffing levels can often give a quick guide to the extent of overstaffing in a water utility. While preferable to allocate staff to either water or sewer services, this information is often not available. The staff ratios therefore use both the number of water connections, and the total number of water and sewer connections as denominators.

Comparisons are best made between utilities that offer the same scope of service both in terms of total size, and mix of water and sewer service. Note that with increasing use of outside contractors the emphasis on staff numbers will become less relevant. The number of people served per connection varies from country to country depending on the housing stock and different approaches to service connections. To facilitate international comparisons a denominator of populations served has also been included, as shown in Table 25. Utilities are frequently over staffed and this measure provides insights into the impact of possible changes in future staff numbers.

**Table 24: Cost Indicator**

INDICATOR	UNIT	CONCEPT
Unit Operational Cost	US\$/m3 sold	Total annual operational expenses/Total annual volume sold.
	US\$/m3 produced	Total annual operational expenses/Total annual water produced.



**Table 25: Staff Indicator**

INDICATOR	UNIT	CONCEPT
Staff/'000 Water connection	#	Total number of staff expressed as per thousand water connections; per thousand water and sewerage connections; per '000 water service population and per '000 water and sewerage service populations.
Staff/'000 W&S connection	#	
Staff/'000 water pop served	#	
Staff/'000 W&S pop served	#	
Labor Costs as a proportion of Operational Costs	%	Total annual labor costs (including benefits) expressed as a percentage of total annual operational costs.
Contracted-out service costs as a proportion of operational costs	%	Total cost of services contracted-out to the private sector expressed as a percentage of total annual operational <sup>1</sup> costs.

### *Quality of Service*

Historically there has been limited attention paid to measures that capture the quality of service provided to customers. This, in fact, should be a particular focus of performance measurement, especially with the emphasis currently being placed on the use of output measures to monitor service provision. The measures presented above are a limited first step in the process of capturing information on quality of service. Complaints, while relatively easy to track, give only a glimpse of actual company performance - consumers may have become accustomed to poor service and do not complain. In other instances there are poor, or non-existent, mechanisms in place to report complaints. Capturing at least some customer-derived data, however, is considered an important starting point.

Collection of wastewater does not mean that the waste is fully treated before discharge back to the environment. This indicator will provide an understanding of the amount of effluent that is discharged without any material treatment by the utility. A more comprehensive set of quality of service indicators (see Table 26) could be developed but the likelihood of the data being collected by utility managers is limited in the short term. Expansion of the set is therefore a medium to long-term objective.

**Table 26: Quality of Service**

INDICATOR	UNIT	CONCEPT
Continuity of Service	Hrs/day	Average hours of service per day for water supply.
Complaints about W&S services	% W&S connection	Total number of W&S complaints per year expressed as a percentage of the total number of W&S connections
Wastewater treatment	%	Proportion of collected sewage that is treated by at least primary treatment (including screening).

### *Billings and Collections*

What people pay for water and sewer services is important. As in other indicators, unreliable consumption information necessitates the use of multiple measures for average tariff (i.e. per cubic meter, per connection, and per household). High tariffs may reflect the degree to which sewer services are provided. As shown in Table 2, the average tariff used in this indicator does not explicitly account for different services provided and any inter utility comparisons should take this into account.

Average tariffs need to be put in the perspective of affordability. Income data, however, is not easy to obtain. The indicator selected here, therefore, compares average per capita tariffs as a proportion of per capita GDP. GDP will be for a whole country, and not reflect local variations, but is considered adequate for the broad comparisons to be made at the current time. Inter country comparisons will be hindered by the variable relationship that exists between GDP and income, but the trend for this ratio within a country will provide insights into changes in the relative cost of water.

Some utilities use fixed charge components within the residential tariff (i.e. irrespective of the amount of water consumed). Such tariffs can adversely affect low volume water consumers. They also protect the revenue stream to the utility in periods when consumption is highly variable. Comparison of the fixed component with the average tariff will give an indication of the relative weight of the fixed and variable component of a water bill.

There may be a cross subsidy between industrial consumers and residential consumers. The ratio of the average charges (per m<sup>3</sup>) to industrial and residential customers provides some quantification of this subsidy. Subsidies are complex and this ratio provides only a simplistic assessment of the situation in any utility.

Paying for the service is an on going expense. For many, the cost of connecting to the pipe network can be a significant financial hurdle. Comparing connection charges will provide insights onto the level to which this hurdle has been raised. It is a particular issue when seeking to connect poorer sections of the community. The indicator provides the absolute level and as a proportion of national GDP per capita.

Billing customers, and getting paid are two different things. The effectiveness of the collections process is measured by the amount of outstanding revenues at year-end compared to the total billed revenue for the year. This is expressed in month equivalents.

**Table 27: Metered Practices**

INDICATOR	UNIT	CONCEPT
Average Tariff Water and Sewerage	<ul style="list-style-type: none"> <li>▶ USD/m<sup>3</sup>/yr.</li> <li>▶ USD/connection/yr.</li> <li>▶ USD/hh/yr.</li> </ul>	Total annual operating revenues (W&S) expressed by annual amount of water sold; by number of connections and by households served.
Total Revenues per population served/GDP	▶ %	Total annual operating revenues per population served/National GDP per capita; expressed in percentage
Residential fixed charge	<ul style="list-style-type: none"> <li>▶ USD/connection/yr.</li> <li>▶ %</li> </ul>	Any fixed component of the residential tariff (total amount) and as a proportion of the average tariff per connection per year.
Ratio of industrial to residential charges	▶ %	The average charge (per m <sup>3</sup> ) to industrial customers compared against the average charge (per m <sup>3</sup> ) to residential customers.
Connection charge	<ul style="list-style-type: none"> <li>▶ USD and % GDP - water</li> <li>▶ USD and % GDP- sewage</li> </ul>	The cost to make a residential pipe connection to the water system and the sewer system measured in absolute amount and as a proportion of national GDP per capita.
Collection Period	▶ Months	Year-end accounts receivable/Total annual operating revenues expressed in months equivalent of sales.

### *Financial Performance*

As indicated in Table 28, these indicators have been selected from a much larger range of financial indicators (which include other leverage, liquidity, profitability and efficiency ratios). They help answer two important questions:

- Do revenues exceed operating costs? And,
- What is the fixed hurdle of debt repayment as a proportion of utility revenue?

**Table 28: Financial Indicators**

INDICATOR	UNIT	CONCEPT
Working Ratio	#	Total annual operational expenses/Total annual operating revenues
Debt Service Ratio	% Operating Revenues	Total annual debt service expressed as a percentage of total annual operating revenues.

### *Capital Investment*

Investment will fluctuate from year to year and the indicators selected will reflect this variation (see Table 29). An inter utility comparison in any one year will likely have a great range of values. Over time, however, rolling average indicators can be calculated that will allow an impression of the

steady state level of investment to be observed. The capital intensity of the utility is captured by the net fixed assets- per-capita served indicator. Unfortunately there is often limited information available about asset values and until more emphasis is placed on this item the values derived must be treated with caution.

**Table 29: Capital Investments**

INDICATOR	UNIT	CONCEPT
Investments	<ul style="list-style-type: none"> <li>▶ % Operating Revenues</li> <li>▶ USD/c.</li> </ul>	Total annual investments expressed as a percentage of total annual operating revenues; and per (water) capita served.
Net Fixed Assets/capita	<ul style="list-style-type: none"> <li>▶ USD/c</li> </ul>	Total annual net fixed assets per (water) capita served.

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